Investigating the U.S. Army's Human Dimension Strategy

By

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Abstract

In 2015, the U.S. Army developed a vision to "win in a complex world" called the Army Human Dimension Strategy (AHDS). The AHDS elevates the importance of optimizing individuals and teams as a hedge against the future world challenges (2015). While the AHDS applies to all "warfighting" functions, this thesis investigates the Human Dimension Strategy transformation efforts applied to the U.S. Army Intelligence Center of Excellence (USAICOE) as the enterprise within the larger Human Dimension Enterprise (HDE). The ability of the HDE to provide "optimized human performance" depends on the interaction and alignment of numerous stakeholders across three levels – enterprise, organization, and individual. The HDE is a "system of systems" that requires a systems approach for investigating the transformation of the HDE. The author's intent is to capture key insights for implementing the AHDS.

The research methodology includes a literature review, case study, and a systems approach using architecting innovative enterprise strategy (ARIES), systems architecture heuristics, and systems requirements. The research analyzes the interfaces of the enterprise boundaries such as the Individuals, Instructors, Capabilities Development and Integration Directorate (CDID), and Centers of Excellence (COE) [IICCE]. By focusing on these key interfaces, the HDE will be able to streamline the value creation and capture more value.

A systems approach provides a more holistic understanding of the AHDS. The human dimension strategy objectives are achievable with the alignment of the enterprise goals, system level requirements, organizational programs, and individual stakeholder needs. The research recommends that the AHDS transformation leverage the synergies with three existing Army programs - Performance Triad (P3), Center for Enhanced Program (CEP), and Tactical Human Optimization, Rapid Rehabilitation, and Reconditioning (THOR3). These three programs address the derived system level requirements for the AHDS's envisioned future.

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Biographical Note

Steven Song is an active duty Army Captain with eight years of experience as a military intelligence officer. He is a graduate fellow in the System Design and Management (SDM) Program - jointly sponsored by MIT School of Engineering and MIT Sloan School of Management. Captain Song is also a recipient of the MIT Lincoln Laboratory military fellowship. Upon graduation, he will have the privilege to teach in the Department of Systems Engineering at the United States Military Academy (West Point). Captain Song's assignments include two tours in Iraq and Korea.

Captain Song's most recently served as the Deputy Intelligence Director (J2) for Special Operations Command – Korea (SOCKOR).   His first assignment was with the Headquarters & Headquarters Company, 163D Military Intelligence Battalion, 504th Military Intelligence Brigade at Fort Hood, Texas.   Upon arrival, he immediately deployed to Diwaniyah, Iraq in support of Operation Iraqi Freedom 06-08. During the deployment, he served as a Signal Intelligence Platoon Leader (SIGINT) responsible for collection and analysis in support of Combined Joint Special Operations Task Force (CJSOTF).

Upon redeployment, he was promoted to first lieutenant and selected for command of Alpha Company, 163d MI Battalion. Captain Song was responsible for reset, training, and transformation of the first Alpha Company into the new 504th Battlefield Surveillance Brigade (BfSB) concept. While assigned to 163d MI Battalion, Captain Song also filled several positions including Battalion Adjutant, Family Readiness Support Assistant, Assistant Operations Officer, and Battle Captain. In 2008, Captain Song deployed again to Iraq (09-11) as the Battle Captain (A/S3) and later, took command of the Headquarters & Headquarters Company for the remainder of his second deployment.

After the MI Captains Career Course, CPT Song was assigned to the 8th Army G2, where he served as the Operations Officer and Executive Officer. In his last assignment, he served as the Collection Manager, Intelligence & Exercise Planner, and later, the Deputy Intelligence Director (J2) for Special Operations Command-Korea.

His awards and decorations include the Bronze Star Medals for service in Iraq (2), Defense Meritorious Service Medal, Meritorious Service Medal, Army Commendation Medals (2), Joint Service Achievement Medals (2), Army Achievement Medals (2), Iraq Campaign Medal, Global War on Terrorism Service Medal, Korea Defense Service Medal, Army Parachutist Badge, Korean Parachutist Badge, the Military Intelligence Knowlton Award, and the German Armed Forces Proficiency Badge (Gold).

Captain Song graduated from the United States Military Academy in 2006 with a Bachelor of Science Degree in Engineering Management and Environmental Engineering.

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To my family, thanks for the unconditional love and support.

Table of Contents

List of Figures

List of Tables

Acronym List

Name	Acronym
Army Human Dimension Concept	AHDC
Army Human Dimension Strategy	AHDS
Army Operating Concept	AOC
Army Capabilities Integration Center	ARCIC
Architecting Innovative Enterprise Strategy	ARIES
Assistant Secretary of the Army Manpower and Reserve Affairs	ASA(M&RA)
Army Warfighting Challenges	AWFC
Combined Arms Center	CAC
Capability Needs Analysis	CNA
Capabilities Development and Integration Directorate	CDID
Center for Enhanced Performance	CEP
Centers of Excellence	COE
Comprehensive Soldier Fitness Performance and Resilience Enhancement Program	CSF-PREP
Department of Defense	DOD
Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities	DOTMLPF
Enterprise Architecture	EA
Force 2025 and Beyond	F2025B
Human Dimension	HD
HDE	HDE
Joint Capabilities Integration Development System	JCIDS
Line of Effort	LOE
Mission Command Center of Excellence	MCCOE
Military Intelligence Captain's Career Course	MICCC
Performance Triad	P3
Research, Development and Engineering Command	RDECOM
Science & Technology	S&T
Systems Architecture	SA
Systems Engineering	SE
Systems Engineering Book of Knowledge	SEBoK
System of Systems	SoS
System Problem Statement	SPS
Tactical Human Optimization, Rapid Rehabilitation, and Reconditioning	THOR3
Training and Doctrine Command	TRADOC
U.S. Army Intelligence Center of Excellence	USAICOE
United States Army John F. Kennedy Special Warfare Center	USAJFKSWCS

Chapter 1: Introduction

"The only thing constant in this world is change" – Heraclitus

The world is becoming more complex, interdependent, and quickly evolving. In 2015, the U.S. Army developed a vision to "win in a complex world" as part of the Army Operating Concept (AOC) called the Army Human Dimension Strategy (AHDS). The AHDS elevates the importance of optimizing individuals and teams as a hedge against the future operational challenges. While the AHDS applies to all "war fighting" functions, this research investigates the AHDS enterprise transformation efforts applied to the U.S. Army Intelligence Center of Excellence (USAICOE) as the enterprise within the larger Human Dimension Enterprise (HDE). USAICOE is one of the eight centers of excellence (COE) responsible for training, education, and future force development for Army intelligence under the Training and Doctrine Command (TRADOC) (About TRADOC 2016).

The primary goal of this research is to apply a framework to investigate the AHDS and make recommendations for the current enterprise transformation. The research maps the high-level AHDS down to the individual level to identify misalignments, opportunities, and critical gaps. The research uses a systems approach to holistically analyze the HDE as a "system" which includes the problem and solution (Maier 2009, 8).

This chapter introduces the context of the AHDS, the challenges of implementation, and the research motivation, scope, research objectives, approach, and thesis organization.

1.1 Introducing the "Human Dimension" (HD)

"Our challenge is to optimize the performance of every soldier and civilians through innovation and investment in education, training, professionalism, leader development, holistic health and total fitness, talent acquisition and precision talent management of our human capital." - Lieutenant General Robert B. Brown, Commanding General, Combined Arms Centers
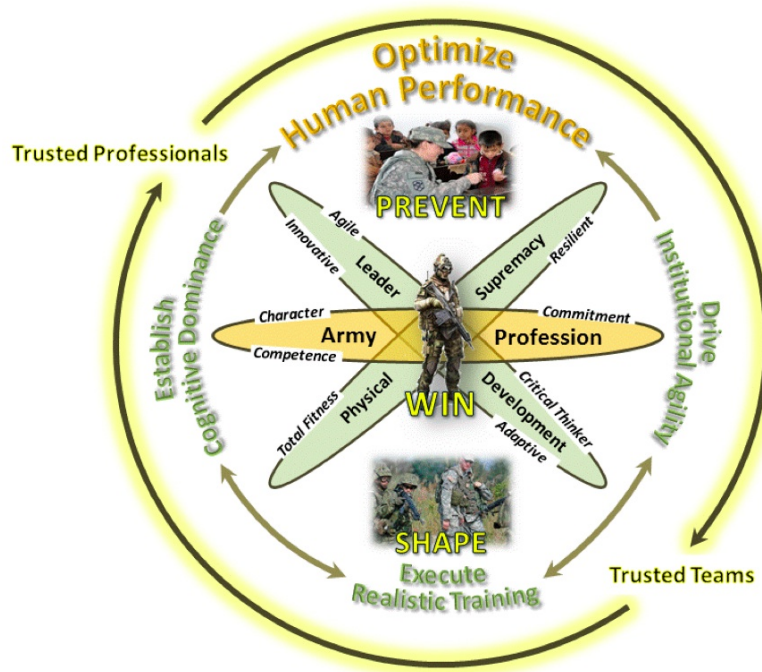
Figure 1: HD Framework (U.S. Combined Arms Center 2014)

In October 2014, the Army introduced a concept to address future operational challenges in a complex environment called the Army Human Dimension Concept (AHDC). The AHDC elevates the importance of understanding the cognitive, social, and physical components of the individual soldiers. As shown in Figure 1, the AHDC provides a framework for how the future Army must focus its resources on increasing the human performance of soldiers (TRADOC 2014c). AHDC describes three ways to accomplish the goal of optimizing human performance.

The Army intends on achieving its envisioned future by establishing "cognitive dominance, executing realistic training, and driving institutional agility" (U.S. Combined Arms Center 2014). The AHDC defines "cognitive dominance" as optimizing cognitive, physical, and social strength to achieve the advantage over a situation or adversary" (TRADOC 2014c). The ultimate goal of the AHDC is to optimize human performance by "applying knowledge, skills, and emerging technologies to improve and preserve the capabilities of the Department of Defense personnel to execute essential tasks." (TRADOC 2014c, 9). The origins of the human dimension research traces back to the TRADOC Pamphlet (TP) 525-3-7-01, Initial Capabilities Document for U.S. Army Human Dimension (2012), and DOTMLPF Interim Change Recommendation document 11 Jul 2013 (U.S. Combined Arms Center 2014, 9).

1.2 Challenges of the Human Dimension – Complexity, Ambiguity, Uncertainty

The AHDS provides a framework for optimizing human performance as part of Army's *Force 2025* and *Beyond* (F2025B) and *Army Operating Concept (AOC)*, but the AHDS is challenging to implement as written. From the initial analysis, the human dimension framework lacks clarity and well-defined metrics for a successful enterprise transformation. Also, many of the stakeholders do not easily understand the "human dimension" implications. Furthermore, even with the advances of modern technology, there are several challenges associated with measuring and assessing individual human performance. For instance, even with advanced technology, it is hard to attribute an individual's poor performance is due to the lack of motivation rather than poor "optimization" of the human dimension domains (social, cognitive, physical). At the individual level, human performance remains a challenge and the Army's "human dimension" is a complex problem.

The AHDS is an ambiguous and complex problem that requires multiple stakeholders at various echelons to align their organizations, processes, metrics, and values down to the lowest level for a successful enterprise transformation. The implementation of the human dimension strategy requires several layers of inputs, feedbacks, and continuous assessments at each level. The HDE needs to have the right architecture, strategy, organization structure, people, processes, and metrics.

Human Dimension Operational Approach
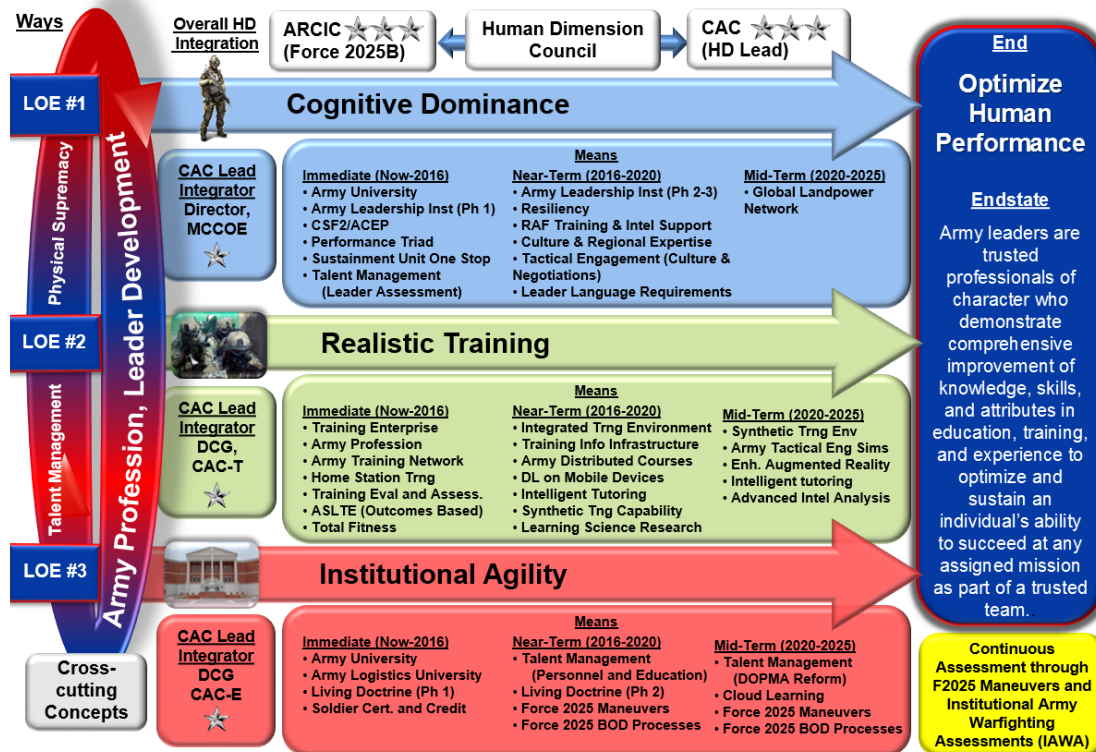
Figure 2: HD Operational Approach (U.S. Combined Arms Center 2014, 13)

As denoted in Figure 2, the HDE consists of multiple stakeholders – Combined Arms Center (CAC) and Army Capabilities Integration Center (ARCIC), Mission Command Center of Excellence (MCCOE). The CAC is designated as the overall lead while the integration responsibility is the Army Capabilities Integration Center (ARCIC).   Additionally, the responsibility of the three line of efforts depends on three different functional organizations such as the MCCOE, CAC-Training, and CAC-Education. While the overall HDE end state is simple – to *optimize human performance*; the implementation of the AHDS is complex, ambiguous, and filled with uncertainty.

1.3 Why Focus on the Centers of Excellence (COE)?

"The greatest leverage in system architecting is at the interfaces. The greatest dangers are also at the interfaces" – Mark Maier, Systems Architecture Expert (Maier 2009)

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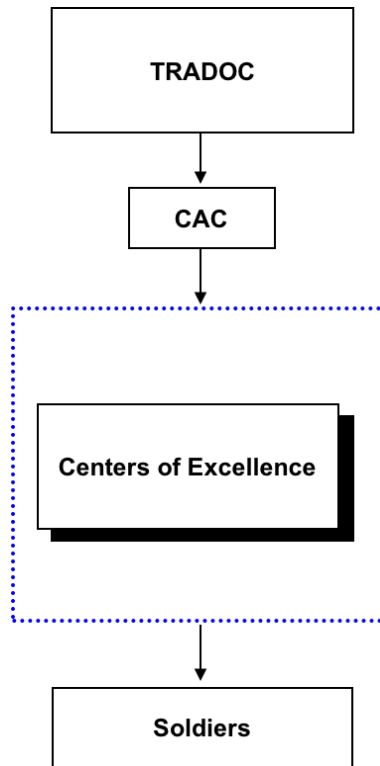
Figure 3: Centers of Excellence as the "Interface"

Figure 3 depicts the Centers of Excellence (COE) as the "strategic" interface for the Army enterprise to the lowest level. This research focuses on the COEs because the COEs have magnitude and scale for enterprise transformation. These eight COEs train over 500,000 service members each year (About TRADOC 2016).

The author investigates the Centers of Excellence (COE) as one of the leverage points for enterprise transformation. The interactions with the boundaries of the enterprise system help determine whether or not the AHDS's value proposition is being adopted or lost. In theory, senior Army leaders should be able to measure the transformation progress of newly developed strategies like AHDS. For instance, an Army leader could compare the readiness level of individuals before the integration of the AHDS training and post-AHDS training. The most experienced, capable, and seasoned leaders should be able to guide their organizations towards an envisioned future. On the other hand, the misguided direction at the COEs can be detrimental to the readiness of the Army. COEs are a force multiplier and build the foundation for the future forces of the Army.
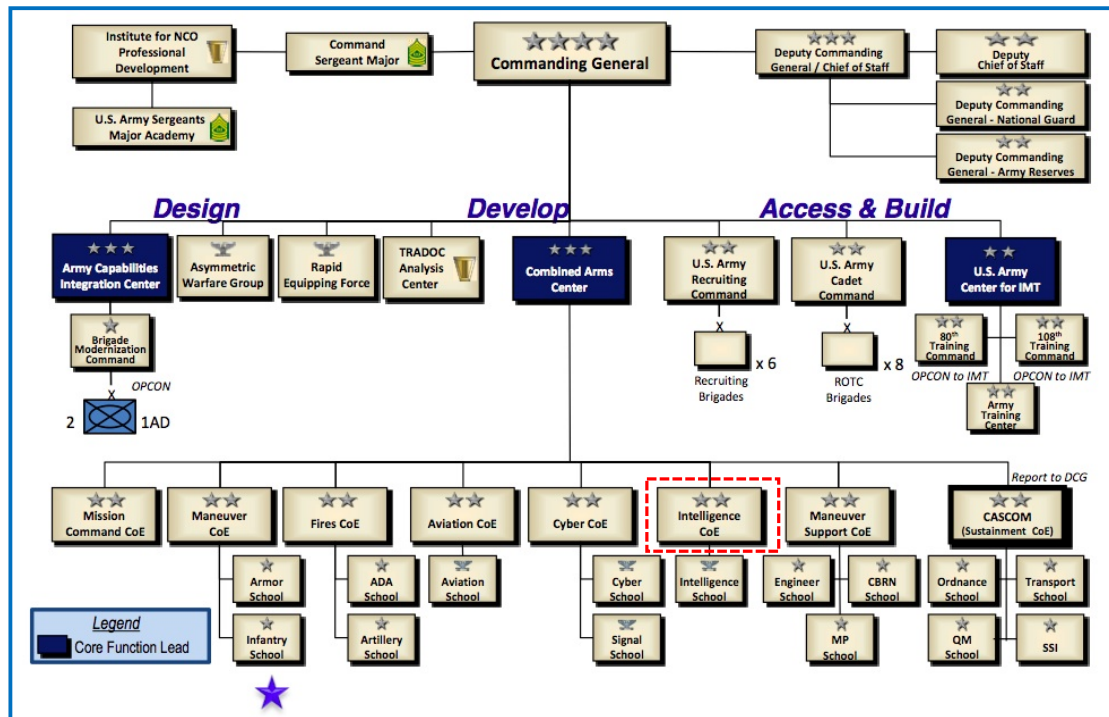
Figure 4: TRADOC Organization Chart (About TRADOC 2016)

In Figure 4, Training and Doctrine (TRADOC) command consists of eight centers of excellence chartered to develop the future Army from their respective "warfighting" specialty such as intelligence (USAICOE). The research explores the AHDS transformation of USAICOE.

TRADOC's Mission:

- *Recruit and train Soldiers, and support unit training*
- *Develop adaptive leaders - both Soldier and Civilian*
- *Guide the Army through doctrine*
- *Shape the Army by building and integrating formations, capabilities, and materiel* (About TRADOC 2016)

The COE is "where the rubber meets the road" for any Army strategy like the AHDS. The success or failure at each COE directly impacts the readiness of the Army now and in its future. The AHDS strives to optimize individual human performance, but this will require thorough analysis and understanding of the human dimension enterprise.

1.4 Human Dimension Enterprise – Three-Levels Description

Every enterprise exists to deliver and capture value for its stakeholders. Nightingale and Rhodes define an enterprise as a "complex, highly integrated systems comprised of processes, organizations, information, and supporting technologies, with multifaceted interdependencies and interrelationships across their boundaries" (Nightingale and Rhodes 2004, 1). This research views the HDE as a "system." A system is a combination of interacting elements organized to achieve one or more stated purpose (INCOSE 2011). Rouse emphasized the importance of looking at the whole enterprise as a system rather than a collection of functions like jobs, tasks, and activities (Rouse 2005). Furthermore, the analysis of the enterprise should begin with the higher-level goals and enterprise objectives of work (Rouse 2005).

An enterprise is like a "system," and larger enterprises are "System of Systems" (SoS). According to Maier, "System of Systems" (SoS) is an "assemblage of components which individually may be regarded as systems, and which possess two additional properties – operational independence of the components and managerial independence of the components" (Maier 1998). The author frames the HDE system using three levels for analysis – Enterprise, Organization, and Individual. The HDE consists of three levels that play a vital role in the emergence behavior of the enterprise system. While each level operates independently, the overall value delivery of the HDE is dependent on the alignment of all three levels.

Enterprise Level 1.0 - One could describe this type of a multi-level enterprise as a "complex system." The value of the enterprise is to optimize human performance and build cohesive teams (U.S. Combined Arms Center 2015). The research investigates USAICOE as one of the systems within the larger enterprise.

Organization Level 2.0 - The U.S. Army Intelligence Center of Excellence (USAICOE) delivers value to the HDE through the integration of the AHDS in the intelligence training, education, and future force development. USAICOE should able to integrate Army strategies into the training and education for the enlisted service members, warrant officers, and commissioned officers. Upon completion of training, all service members become part of the Military Intelligence Corps.

Individual Level 3.0 - At the lowest level of the HDE is the individual soldier. The independent actions of the individual directly impact the overall performance of HDE. The micro-interactions with the organization directly affect the Army HDE.

While every individual is unique, the AHDS separates the individual into three components – social, cognitive, and physical. Figure 5 captures the three level interactions within the HDE.

It is important to note that the human dimension enterprise consists of all three levels.
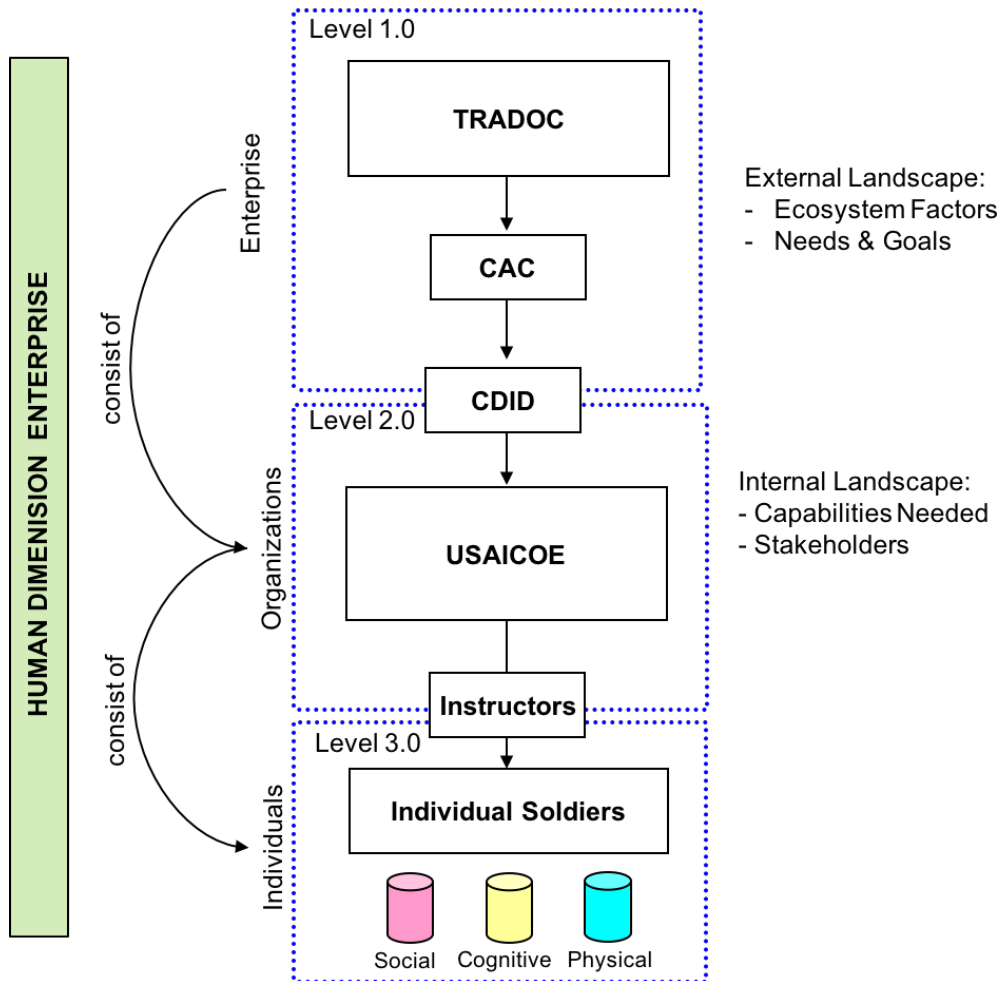
Figure 5: Human Dimension Enterprise as "Systems"

In Figure 5, USAICOE (Level 2.0) is an enterprise within the larger HDE. All three levels of the HDE enterprise operate independently and the interactions among the levels create an emergence behavior that impacts the overall performance of the HD enterprise. Each system within the larger system must fulfill its functions and requirements beginning with the individual for the transformation of the HDE. This research uses USAICOE as a case study to investigate the interactions at the interfaces of the organizations - Capabilities Development and Integration Directorate (CDID) and Instructors.

The next section describes the research motivation which originates with the publication of the Army Human Dimension White Paper (U.S. Combined Arms Center 2014).

1.5 Research Motivation

"Humans are more important than Hardware" – Special Operation Forces Truth #1

In today's modern warfare, the Army requires individual soldiers to perform at a higher level than the past. The fundamental "basic" requirements are inherently more complex and require a deeper understanding of the cognitive, physical, and social components of the human dimension (U.S. Army Combined Arms Center 2014, 14). As depicted in Figure 6, today's Army demands more from the individual soldiers.

	The "Basics" Then 1944-2001	The "Basics" Now 2014-Future
Shoot	- Effectively Engage Targets - Accuracy and precision - Hit targets with iron sights	- Increasing importance of discriminate fires - More complex rules of engagement - Split-second decisions to use force or not - Increased use of optics/ night vision
Move	- Squad/Platoon Battle Drills - Situational awareness derived from a map - Company AO may include several grid squares - Operate in difficult terrain	- Dispersed, independent movements - Situational awareness derived from a COP (common operating picture) - Company AO may include multiple districts and villages (larger than a battalion AO in the past) - Operate among the people in complex societies in any terrain
Communicate	- FM Radio Procedures - Military to military	- Voice and Digital networks - Host nation, media, Interagency - Cultural awareness, negotiations, social media - Matching actions to words - Winning the battle of the narrative
Physical Fitness	- Basic physical conditioning (push-ups, sit-ups, 2 mile run)	- Total Fitness (physical, mental, social, resilience)
Discipline	- Do the right thing when no one is watching	- Do the right thing as the whole world is watching

Figure 6: Individual "Basic" Skills Requirements (U.S. Army Combined Arms Center 2014, 14)

The Army cannot solely depend on materiel solutions and technology to be its source of competitive advantage in the world (U.S. Army Combined Arms Center 2014). The AHDS emphasizes the importance of focusing its efforts and resources on its most precious resource, the soldier; however, the ability to optimize human performance at the individual level is challenging.

While the Army spends a significant amount of money on research and development of new technologies, there is not a single tool or technology that can optimize human performance at the individual level. The individual soldiers are the biggest drivers of the mission success, but

it is the least understood. The human dimension is a complex problem that requires innovative and interdisciplinary systems tools.

The AHDS is an important strategy and a hedge against the complex future world. The implementation of the AHDS is important because it has the potential to solve nine of the twenty Army's warfighting challenges (AWFC) listed below (2014):

- AWFC 1: Develop Situational Understanding
- AWFC 2: Shape the Security Environment
- AWFC 3: Provide Security Force Assistance
- AWFC 4: Adapt the Institutional Army
- AWFC 8: Enhance Training
- AWFC 9: Improve Soldier, Leader, and Team Performance
- AWFC 10: Develop Agile and Adaptive Leaders
- AWFC 14: Ensure Interoperability and Operate in the Joint, Interagency, Intergovernmental, and Multinational (JIIM) Environment
- AWFC 19: Exercise Mission Command
  (U.S. Combined Arms Center 2014)

While some argue that the AHDS is a novel strategy for the Army's future, others claim that the strategy is not new. The successful synchronization and integration of this strategy may provide the biggest return on its investment, not only fiscally, but regarding individual and unit level readiness. The value delivery of the AHDS is complex and requires the tracing the high-level requirements to the individual soldier. As written, the AHDS is dependent on each of the functional centers of excellence (COE) to integrate and translate the strategy into practice. The author proposes that the HDE can achieve its desired future state through the alignment of strategic objectives, key processes, stakeholder values, and metrics at each TRADOC's Centers of Excellence. Using a systems approach, the author hopes to unfold the key gaps, misalignments, and concerns with the HDE transformation. The research investigates the AHDS transformation efforts using a systems approach.

A systems approach is particularly useful in understanding complex problems. According to the System Engineering Book of Knowledge (SEBoK) v1.3, a systems approach helps identify opportunities, synthesize possible alternatives, analyzes and selects the best alternative (BKCASE 2014, 157). The SEBoK describes three ways in which systems engineering could

make use of a systems approach.

1. Overall problem-solving approach

2. Scope of problem and solution system contexts considered

3. Embedding of systems thinking and systems thinking tools and in all aspects of the conduct of that approach (BKCASE 2014, 163)

The research investigates the three levels of the HDE to gain a better understanding of the challenges and to identify transformation opportunities towards the envisioned future. The next section discusses the scope and research objectives.

1.6 Scope and Objectives

The scope of the research focuses on establishing "Cognitive Dominance" (Line of Effort #1, Figure 7) because the cognitive component of the human dimension is ambiguous, complex, and challenging to understand. To navigate the challenges of the human dimension transformation, the author applies a systems approach to better understand the current state of the enterprise. The research utilizes the Architecting Innovative Enterprise Strategy (ARIES) framework to trace the HDE needs & goals to the individual level.
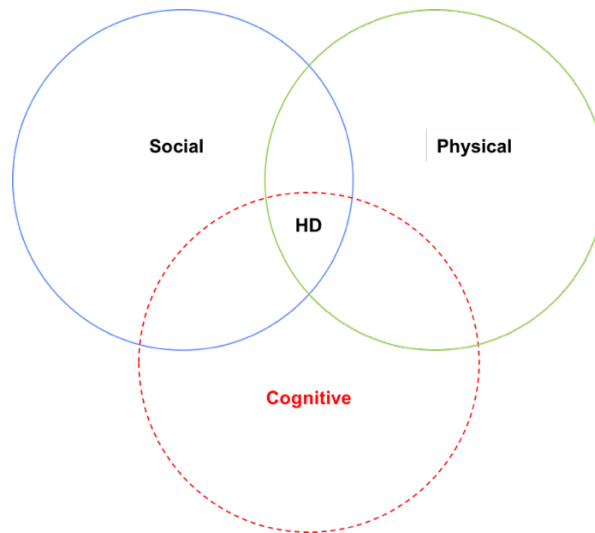
Figure 7: Scope of Research - Cognitive Dominance

The primary objective of the research is to investigate how effective the current HDE is integrating the AHDS down to the individual level. The second objective is to identify the

system level requirements for the human dimension transformation.   The third objective is to identify and evaluate existing Army programs that may assist with the human dimension vision.

- o How effective is the Army Human Dimension Strategy (AHDS) delivering value to all three levels of the enterprise?
- o What are the system level requirements for the future architecture of the human dimension enterprise?
- o What are the existing Army programs that can be leveraged to accelerate the Human Dimension transformation?

1.7 Research Approach

The research employs a systems approach using the principles of Architecting Innovative Enterprise Strategy (ARIES) framework (Nightingale and Rhodes 2015), systems architecture, and systems level requirements for analyzing the current state of the HDE. ARIES framework analyzes the current human dimension transformation efforts in a holistic manner. The research investigates USAICOE as an indicator of the AHDS transformation effort. The enterprise elements of the ARIES framework provide ten unique lens for understanding the enterprise as a system and its interactions with the interfaces. In addition, the research utilizes a literature review, stakeholder analysis, and insights from stakeholder discussions. The X-matrix tool captures any misalignments between the different levels of the enterprise. Once the current state of the enterprise is analyzed, the research identifies opportunities for enterprise re-alignment.

In Figure 8, Systems Architecture (SA) provides heuristics for the future HDE. Systems Engineering (SE) translates the AHDS into "design" through the identification of the necessary system level requirements. The primary goal of this research is to apply a framework to investigate the AHDS and make recommendations for the current enterprise transformation.

The research investigates the HDE transformation by:

- Defining the Multi-level Enterprise
- Analyzing the ecosystem and capabilities
- Mapping the enterprise level "needs" to goals
- Identifying the "needs" of the HDE system
- Performing a stakeholder analysis

- Describing the current state of human dimension transformation at USAICOE
- Analyzing the current enterprise architecture alignment using X-matrix
- Identifying the architecting tasks and supporting analysis for the future enterprise
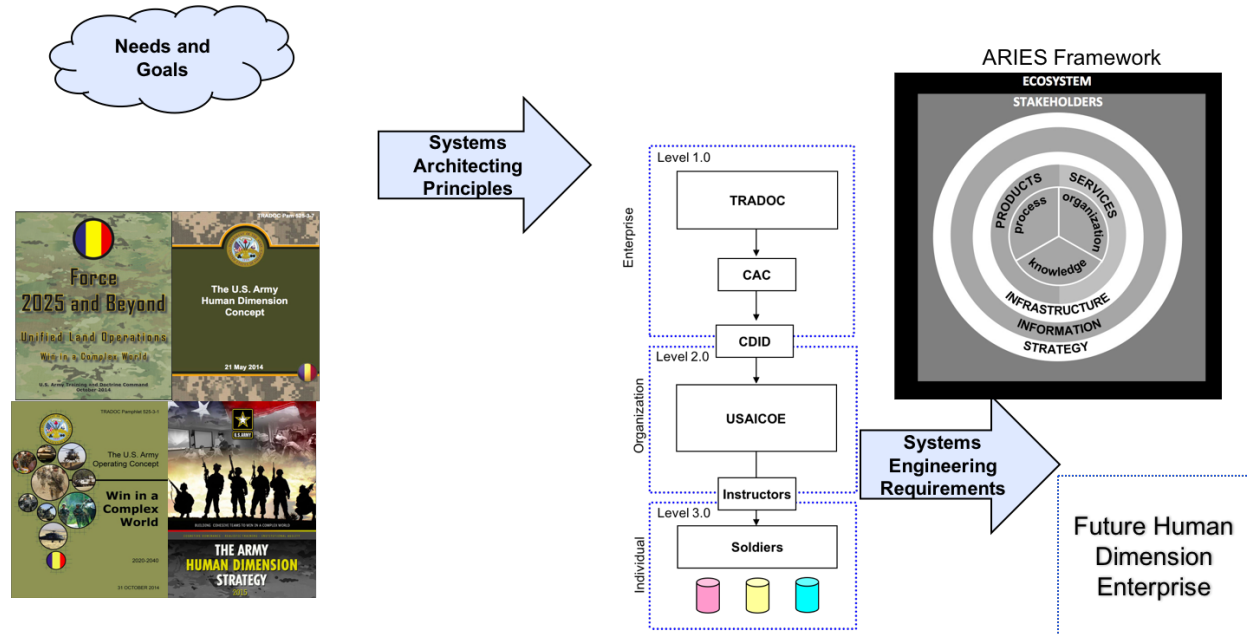
Figure 8: Research Approach

1.8 Thesis Organization

The thesis is organized into seven chapters that analyze the HDE transformation. The thesis roadmaps the current state of the human dimension strategy down to the individual level. Each chapter investigates the integration of the human dimension strategy throughout the chapters.

- **Chapter 1 – Introduction:** The chapter describes the context, research motivation, scope, objectives, research approach and thesis organization.
- **Chapter 2 – Literature Review**: This chapter provides a literature review on the research approach applied to the human dimension challenge. The literature review discusses the research approach such as Enterprise Architecting (ARIES framework), systems architecture, systems requirements, and enterprise performance management.
- **Chapter 3 – Enterprise Landscape:** The chapter provides the background discussion on the Army's perspective of the future operational environment. This chapter highlights the key literature around the human dimension. In addition, the chapter identifies the needs, goals, and critical gaps of the HDE. These gaps are defined as system level

requirements for enterprise transformation success. By the end of this chapter, one should have an understanding of the ecosystem, "needs," and capabilities that impact the overall success of the transformation strategy.

- **Chapter 4 – Stakeholder Analysis:** This chapter provides an understanding of the value desired from the enterprise through a detailed stakeholder analysis. The stakeholder analysis identifies the key stakeholders, primary beneficiary, and their needs. The stakeholder analysis provides the necessary context for understanding USAICOE's current state in the next chapter.

- **Chapter 5 – Current State of Enterprise:** This chapter analyzes USAICOE (level 2.0) as a case study. This chapter defines the current state of the enterprise as a "system" using enterprise elements, enterprise capabilities, and the analysis of the value exchange from stakeholders. Through the analysis of USAICOE, the author hopes to gain insights that could be useful to the other COE when integrating the AHDS. This chapter identifies any misalignments in the multi-level enterprise and impacts to overall value delivery.

- **Chapter 6 – Analysis for Architecting the Future Enterprise:** This chapter creates a holistic vision for the future HDE. This chapter applies tools and approaches from system architecture, system requirements, and performance management to provide the supporting analysis for architecting tasks and high-level requirements for future architecture.

- **Chapter 7 – Discussion:** This chapter provides the summary of findings, heuristics for architecting, and identifies existing HD solutions that meet the goals of the AHDS. It provides a discussion on the integration of the AHDS and depicts the current state of the HDE. This chapter provides recommendations for human dimension transformation at the enterprise, organization, and individual levels.   It recommends "quick wins" for the HDE using the X-Matrix and concludes with the limitations of the research and areas for future work.

Chapter 1
Introduction
- Context
- Motivation
- Scope & Objectives
- Approach
- Thesis Organization

Chapter 2
Literature Review
- Enterprise Architecting
- Systems Architecture
- Systems Engineering
- Performance Management

Chapter 3
Human Dimension
Enterprise Landscape
- Ecosystem Factors
- Background on Human Dimension
- HDE Needs
- Enterprise Capabilities

Chapter 6
Architecting Analysis
- Envisioned Future
- Vignette of HDE
- Architecting the Future
- Requirements for future HDE

Chapter 5
USAICOE Case Study
- Scope and Boundary
- USAICoE Enterprise
- Enterprise elements
- Soft Factors
- Enterprise Alignment: X-Matrix
- Discussion

Chapter 4
Stakeholder Analysis
- Stakeholders / Beneficiaries
- Stakeholder Segmentation
- Value Map
- Internal Stakeholders Needs
- Value Exchange
- Discussion

Chapter 7
Discussion
- Research Findings | Recommendations | Review of Research Objectives
- HDE Analysis Summary | Key Contributions | Limitations | Future Work | Closing Thoughts

Figure 9: Thesis Organization

Chapter 2: Literature Review

This chapter provides a literature review on the research approach applied to the human dimension strategy. The literature review discusses the research approach including Enterprise Architecting (ARIES framework), systems architecture, systems requirements, and enterprise performance management. The chapter provides an overview of why enterprise transformation fails using principles. The next section describes the ARIES framework for analyzing the HDE.

2.1 Enterprise Architecting – ARIES framework

Every enterprise has an architecture. Many of today's enterprises require new frameworks and system analysis tools to capture the complexity and dynamics of an organization. The ARIES framework begins with the understanding that an enterprise is a complex system; therefore, enterprises should be approached in a holistic manner (Nightingale and Rhodes 2015, 14). The ARIES framework provides a holistic approach to transforming an enterprise from the current "As-Is" state to the desired future state – "To-Be."   The research analyzes the current state of the HDE transformation and develops requirements for the envisioned future.

The ARIES framework is fitting for the AHDS because the AHDS is an enterprise transformation strategy for addressing the future operational challenges. The HDE transformation requires the understanding of the interactions between the different levels of the enterprise. The ARIES framework applies enterprise elements model to help holistically understand the enterprise and interactions with its environment (Nightingale and Rhodes 2015).

2.1.1 Key Terms

A common understanding of the key terms is necessary for "architecting the future enterprise" – creating the blueprint for the desired future enterprise (Nightingale and Rhodes 2015). The definition of Architecting Innovative Enterprise Strategy (ARIES) and enterprise stakeholders provides a better understanding of the framework for analysis.
Nightingale and Rhodes (2015) describe the following terms, and a brief statement on how the research relates to this is given:

27

- **Architecting** is the creating the "blueprint" for the enterprise to achieve its desired future state (2015,11).
    - o The AHDS is similar to a "blueprint" for the Army's desired future. This research applies the AHDS using USAICOE as an indicator of the ongoing enterprise transformation efforts.
- **Innovative** means "forward-looking so that the enterprise evolves to stay ahead of changes in its ecosystem that may impact its ability to survive and to thrive." (2015,11).
    - o The research uses stakeholder discussions to capture the capabilities needed for the future enterprise.
- **Enterprise strategy** is the high-level strategy on how the enterprise will deliver value to all its stakeholder while both "pulling from and contributing to its own ecosystem" (2015,12).
    - o The AHDS is part of the Army's enterprise strategy for the future Army.
- **Enterprise stakeholders** are "individuals and groups who contribute to, benefit from, and are affected by the enterprise" (2015,16).
    - o INCOSE defines a stakeholder as any entity (individual or organization) with a legitimate interest in the system (INCOSE 2011, 57). Stakeholders typically include users, operators, organization decision-makers, regulatory bodies, developing agencies, supporting organization, and interoperating systems.

The next section describes the ARIES process model for investigating the AHDS applied to HDE.

2.1.2 ARIES Process Model
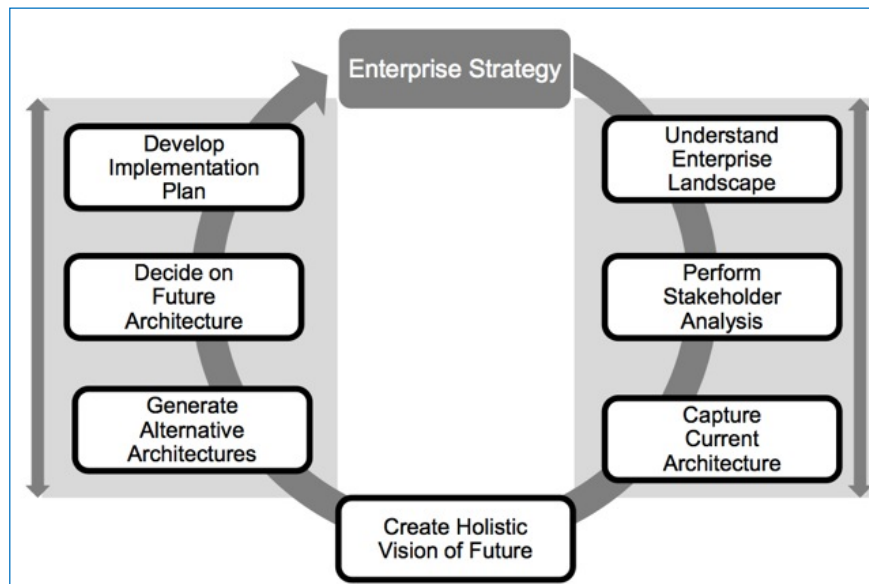
Figure 10: ARIES Process Model (Nightingale and Rhodes 2015, 23)

In Figure 10, the ARIES process model provides a framework to analyze the HDE. The ARIES process model consists of seven architecting activities. This research investigates the HDE using the first four "architecting" activities – understanding the enterprise landscape, performing stakeholder analysis, capturing the current architecture, and creating a holistic vision of the future. The three remaining architecting activities integrate into the supporting analysis for architecting the future HDE (Chapter 6). The research provides the supporting analysis for architecting tasks and develops high-level requirements for the future architecture. Rather than generating alternative architectures for the HDE, the research investigates "low-hanging fruit" solutions from the existing Army programs. The identification of synergies in the enterprise will help the HD leadership integrate the AHDS efficiently.

Nightingale and Rhodes (2015) describe the ARIES activities:

1. **Understand the Enterprise Landscape** – This is the first step in understanding the external enterprise environment. The ecosystem factors and existing enterprise capabilities provide the greater context that the enterprise operates within. The next chapter explores the HD enterprise landscape in further details.

2. **Perform Stakeholder Analysis** – Once the enterprise landscape is understood, the next activity is a stakeholder analysis. Multiple stakeholder discussions assist with the understanding of all the interactions and influences within the enterprise.

29

This step is essential in determining the gap between actual state and desired state of the enterprise. A stakeholder value map shows how the effective the enterprise is delivering value to the stakeholder.

3. **Capture Current Architecture –** In this activity, the enterprise element model assists with examining the current architecture. Often, the current enterprise architecture operates differently from the formal organization chart. The author uses USAICOE as a case study to determine the current state of the HDE transformation.

4. **Create Holistic Vision of Future –** The future vision takes into consideration the ecosystem factors, enterprise capabilities, and the enterprise goals. The research uses a vignette to describe to desired future for the HDE.

The following section provides an overview of the enterprise elements model that influences HDE. One can also view the enterprise elements as "lenses" that provide unique perspectives and insights.

2.1.3 Enterprise Element Model

"Given that enterprise systems are complex, transforming an enterprise from a current state to a desired future state necessitates a well-specified design or blueprint – what we call an architecture" (Nightingale and Rhodes 2015, 6)

Many enterprises strive to adapt to the changing world through transformation, but many transformation efforts fail for various reasons. Enterprise transformation concepts have been around for almost two decades. Since 2005, William Rouse's theory of enterprise transformation outlined why and how transformation happens in terms of process and architecture (Rouse 2005). Nightingale and Rhodes assert that one of the reasons for architecting enterprise failure is focusing only on one view or element (e.g. technology) without taking into account multiple elements (2015, 2).

The ten enterprise elements that influence an enterprise are ecosystem, stakeholders, strategy, information, infrastructure, products, services, process, organization, and knowledge (Nightingale and Rhodes 2015). Figure 11 illustrates the ten enterprise element model.

Figure 11: ARIES Enterprise Element Model (Nightingale and Rhodes 2015, 16)

In Table 1, the ten enterprise elements provide a means to view the entire enterprise holistically from different perspectives. The ARIES framework emphasis on the interactions across the boundaries of the elements makes this approach well-suited for the Army Human Dimension transformation.

Table 1: Ten Elements of the Enterprise (Nightingale and Rhodes 2015, 19)

Elements	Description
Ecosystem	The external regulatory, political, economic, market and societal environment in which the enterprise operates and competes/cooperates with other enterprises
Stakeholders	Individuals and groups who contribute to, benefit from, and/or are affected by the enterprise
Strategy	The strategic vision along with the associated business model and key strategic thrusts, goals, and performance management system
Information	Information the enterprise requires to perform its mission and operate effectively in accordance with its strategy
Infrastructure	Enterprise enabling systems and information technology, communication technology, and physical facilities that enable enterprise performance
Products	Products the enterprise acquires, markets, develops, and manufactures, and/or distributes to stakeholders
Services	Offerings derived from enterprise knowledge, expertise, and competencies that deliver value to stakeholders, including support of products
Process	Key leadership, lifecycle, and enabling processes by which the enterprise carries out its mission and creates value for its stakeholders
Organization	Culture, organizational structure, and underlying social network of the enterprise
Knowledge	Competencies, expertise, explicit, and tacit knowledge, and intellectual property resident in and generated by the enterprise.

One of the elements that play a dominant role in the HDE is the ecosystem, which can be further characterized through various ecosystem factors. The next section describes the enterprise ecosystem factors in order to help understand the upstream influences.

2.1.4 Enterprise Ecosystem Factors

The enterprise ecosystem of the HDE can be characterized by seven ecosystem factors. These ecosystem factors help to "look forward" when architecting the future. A proactive

enterprise is one that integrates the ecosystem factors influence as part of the enterprise strategy (Nightingale and Rhodes 2015). The research begins with an analysis of the ecosystem factors in order to identify the most influential factors. This research begins with investigating all of the ecosystem factors that impact the upstream influences on the HDE.

Table 2: Ecosystem Factors (Nightingale and Rhodes 2015, 31)

Ecosystem Factor	Examples of shifts that may trigger enterprise transformation
Politics	• A new government comes to power, impacting investor behavior. • An anticipated election cycle affects leadership change.
Regulation	• New policies restrict countries where the enterprise may operate. • Introduction of more stringent emission standards affect products.
Economy	• A downtown in the global (or national) economy necessitates downsizing. • New venture investment funding dries up for a period.
Market	• A strong, new competitor enters the enterprise's principal market. • The signing of a trade agreement opens the potential for a new market.
Technology	• Disruptive innovation diminishes the attractiveness of the enterprise's products. • A technology innovation shifts the business model to a service-oriented model.
Resource	• Imposition of mandatory retirement age causes rapid workforce attrition. • Availability of a new material opens new product opportunities.
Environment	• A natural disaster disrupts business in a key region. • Stakeholders begin to clamor for "green" enterprise practices.

The Army must remain an adaptable organization in the evolving operational environment. However, too often, the Army pivots its current strategy due to influences from new leadership, emerging threats, and technology (ecosystem factors). Like many large enterprises, the Army's challenge is being able to anticipate its changing ecosystem and "pivot" an entire enterprise towards a new strategy. The AHDS defines this as "institutional agility."

When designing new architectures, heuristics or principles can assist with the HDE transformation. The next section describes heuristics as an effective tool to use in architecting the future state of an enterprise.

2.2 Systems Architecture (SA) – Heuristics for the Future State

"*The art in architecting lies not in the wisdom of the heuristics, but in the wisdom of knowing which heuristics apply,* a priori, *to the current project.*" (Maier 2009, 31)

Architecting is arguably one of the most important steps because of the impact it has on the upstream influences (Nightingale and Rhodes 2015). However, many enterprise transformations fail due to lack of understanding of interactions and complexity of the systems

involved. "Architecting" is an attempt to not only solve the problem right but also the right problem. Also, heuristics are valuable tools for architecting tasks. Architecting focuses on the alignment of interfaces and stakeholder needs (Nightingale and Rhodes 2015).

In fact, the TRADOC Commanding General (General David Perkins) identifies himself as the lead "architect" for the future Army in the Army Operating Concept (2014). As the TRADOC commander, General David G. Perkins is responsible for providing the strategic leadership and direction on how the Army will "win in a complex world." The role of the architect is to define the boundary, goals, and functions of the systems, create concepts with key metrics, and allocate functionality and interfaces (Cameron 2014).

Heuristics and principles can serve as prescriptive guides for the future transformation of the HDE. Through the process of architecting, the architect (transformation lead) develops heuristics for the other enterprise transformation. For instance, using USAICOE as a case study, the development of heuristics from USAICOE may be helpful for the other COEs. Maier argues that heuristics are like tools for carpenters, painters, and sculptors and can serve as a guide, but must be used with judgment (Maier 2009, 30). The origin of heuristics traces back to anecdotes and stories, which became quickly remembered fables and parables (Maier 2009, 31).

Heuristics are valuable communication tools because they are easily understood, self-evident, and applicable to "systems." For example, one of the heuristics used for this research is *leverage at the interfaces of the system*. As the world becomes more complex, heuristics can be applied as tools for managing complexity. In the discussion, heuristics are recommended for other COEs to assist with the transformation of the HDE.

While heuristics are helpful, many enterprises simply fail for various reasons. In Table 3 the enterprise transformation principles serve as a checklist for determining whether or not the Army's Human Dimension Strategy adheres to the enterprise transformation principles. An evaluation of the principles is discussed in Chapter 7.

Table 3: Enterprise Transformation Principles (Nightingale and Srinivasan 2011, 14)

Enterprise Transformation Principles
❑ Adopt a holistic approach to enterprise transformation
❑ Secure leadership commitment to drive and institutionalize enterprise behaviors
❑ Identify relevant stakeholders and determine their value propositions
❑ Focus on enterprise effectiveness before efficiency
❑ Address internal and external enterprise interdependencies
❑ Ensure stability and flow within and across the enterprise
❑ Emphasize organizational learning

2.3 Systems Engineering (SE) – System Level Requirements

Systems Engineering (SE) is useful in translating the AHDS to "design" by developing system level requirements. These system level requirements will be helpful in translating the human dimension strategy towards a future architecture. The detailed requirements will be used for developing architecting tasks for the future enterprise and assessing current human dimension-related programs.

One of the research objectives is to identify the system level requirements for the HDE. A good system requirement usually begins with "shall, will, or must" (Hommes 2014). Requirements are "jobs that need to be done or the characteristics of the product we want to buy, develop, build, modify, or have developed, built or modified" (Hooks and Farry 2001). Table 4 describes the attributes of good requirements.

Table 4: Good System Requirements (Hommes 2014)

Good Requirements (Hommes 2014)
• Necessary – What would happen if you didn't include this requirement?
Targeted at the next level of the system decomposition
Solution Neutral – Not describing the solution
• Verifiable - How will you know you have met the requirement? – Inspection – Analysis – Demonstration – test
• Clear and Concise – Possible to interpret it in multiple ways? – Terms are well defined? – Non-contradictory with others
• Consistent with the needs of external interfaces
• Achievable
• Traceable up to higher level needs and down to lower level requirements
Contain requirements rationale

Once the requirements of the HDE are specified, the performance of the enterprise should be measured using metrics. The AHDS specifies key tasks for the "cognitive dominance" line of effort, but the AHDS lacks defined metrics tied to each key task (refer to Annex B: Cognitive Dominance). The next section describes the underlying reasons why metrics are important for enterprise management.

2.4 Enterprise Management – Performance and Metrics

"Enterprise performance measurement system – a system of metrics used to gather the performance data and information from throughout the enterprise that are needed to assess overall enterprise performance. Metrics are the objective, quantified information collected to support decision making (Nightingale and Srinivasan 2011, 98)

Enterprise management is key to determining whether or not the enterprise is going in the right direction. Martin (2010) has determined that the following four processes are needed in support of enterprise management activities:

1. *Strategic technical planning*

2. *Capability-based planning analysis*

3. *Technology and standards planning,*

4. *Enterprise evaluation and assessment*

   (BKCASE 2014, 613)

This research investigates how the HDE is currently evaluating and assessing its performance with the AHDS.

2.4.1 Performance Measurement and Metrics

"If you can't measure it, you can't manage it." – Peter Drucker

Enterprises usually have performance measurement, but only a few succeed at translating higher strategic objectives into effective metrics. Performance measurement is the "process of measuring efficiency, effectiveness, and capability, of an action or a process or a system, against given norm or target" (Nightingale 2005). Nightingale and Srinivasan argue that enterprises do not produce measures that correctly represent what is being measured or needs to be measured (Nightingale and Srinivasan 2011, 101). Furthermore, many public sector professionals are philosophically resistant to measurement because measures establish expectation and criticism (Behn 2005). Performance metrics can cause public employees to focus only on the measured output and not the actual result (Behn 2005).

Table 5: Enterprise Metrics: Common Problems (Nightingale and Srinivasan 2011, 101)

Enterprise Metrics – Common Problems
The metrics do not correctly represent what is being measured or needs to be measured.
The metrics are locally focused at the expense of enterprise performance.
The metrics may inadvertently drive counterproductive behavior.
The metrics are used solely for compliance purpose.
The metrics do no provide information in a way that is actionable.

In general, most enterprises utilize standard metrics to measure, monitor, and assess transformation progress. Additionally, enterprise metrics are essential for organization transformation to be able to measure objectively progress and understand how well the enterprise is delivering value.   The author investigates the metrics utilized throughout the HDE multi-levels: enterprise, organization, and individual.

An efficient method to measure enterprise performance metrics is utilizing the S.M.A.R.T model (Doran 1981). SMART is an acronym that stands for Specific, Measurable, Achievable, Relevant, and Time-bound. This concept was used to write effective management goals and objectives. In this research, the SMART method is applied to the AHDS's key tasks for "cognitive dominance."

After the understanding of the enterprise's strategic objectives, metrics, key processes, and stakeholder values are known, the X-Matrix helps analyze the areas of misalignment (Nightingale and Rhodes 2015, 66).

2.4.2 Enterprise Alignment

The X-Matrix is an effective system tool that visually captures the alignment of an enterprise's objectives, stakeholder values, key processes, and metrics (Nightingale and Rhodes 2015, 66). In Figure 12, each cell may be shaded to represent a strong (dark shade), weak (light shade), or no interaction between the row and column. This tool is particularly useful for showing gaps and opportunities for transformation in the current state. In general, a misalignment will show no interactions between the two entities.
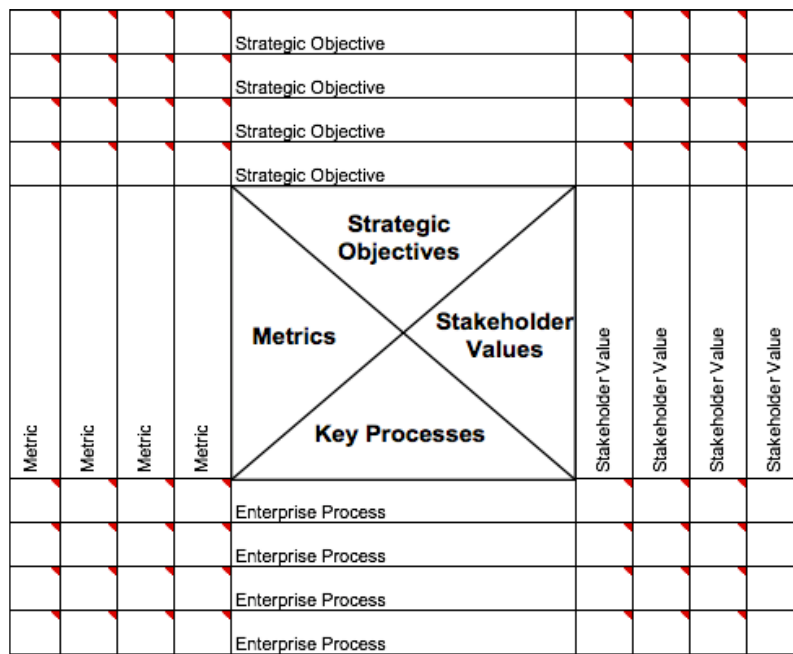
Figure 12: X-Matrix (Nightingale and Rhodes 2015, 66)

Using the X-Matrix, the following questions may be asked:

1. Upper Left Quadrant (Strategic Objective – Metrics): *Is this strategic objective measured by this metric?*

2. Lower Left Quadrant (Metrics – Key Processes): *Does this metric measure performance of this process?*

3. Lower Right Quadrant (Key Processes – Stakeholder Values): *Does this process contribute to delivering this stakeholder value?*

4. Upper Right Quadrant (Stakeholder Values – Strategic Objective): *Is this stakeholder value represented by this strategic objective?*

Chapter 3: Army Human Dimension Enterprise Landscape

"While We Cannot Predict the Future of Our Increasingly Uncertain and Complex Strategic Environment, We Can Be Certain that Our Nation Will Continue to Call on America's Army."
- General Raymond T. Odierno, 38th Chief of Staff of the Army

This chapter provides the strategic background information on the Army's Human Dimension Enterprise (HDE) landscape. Moreover, this section provides the context for the needs and goals of the HDE. The chapter frames the recent discussions on the Army's perspective of the complex environment and describes the ecosystem factors that impact the enterprise.   In addition, the chapter discusses the derived HDE capabilities needed for the future state. By the end of this chapter, one should have an understanding of the dominant ecosystem factors and the future needed capabilities for the HDE.

3.1 Ecosystem Factors – External Landscape

The first step in understanding the enterprise is the ecosystem. The ecosystem factors describe the greater context of the enterprise and are one of the enterprise elements used for analysis. The ecosystem plays an instrumental role influencing the HDE and USAICOE. At the enterprise level (level 1.0), the HDE (e.g. CAC, ARCIC, TRADOC) design new programs, strategies, and policies while the needs of the larger defense enterprise could quickly evolve.

Even the slightest changes at the enterprise level can have significant impacts on the individual level. By understanding the ecosystem factors, leaders at all levels can proactively "pull" information to their level and become more adaptable, flexible, and agile. The research looks at USAICOE as the unit of analysis because the ecosystem factors affect the organization and individual levels.

3.1.1 Politics - The Army enterprise is nested within the larger federal government and defense enterprise. Politics play an instrumental role in influencing all echelons of government especially, with resource allocation, budget, and personnel. Moreover, at the highest level, priorities are continually changing and at the lowest level, there can be an oscillating effects due to the time delays from higher. Individuals at the lowest level are continuously adapting and changing priorities that impact readiness, morale, and creates "firefighting" mentalities.

While the HDE and USAICOE are investing its limited resources and time in implementing the human dimension strategy, there can be a shift in paradigm, priorities, and strategies. For instance, on February 7, 2016, President Barak Obama ordered the Pentagon to prioritize climate change as the number one priority.

"Incorporate climate change impacts into plans and operations and integrate DoD guidance and analysis in Combatant Command planning to address climate change-related risks and opportunities across the full range of military operations, including steady-state campaign planning and operations and contingency planning"
(Scarborough 2016).

Without a doubt, a shift in political priorities impacts the Army's ability to execute and implement the AHDS.

3.1.2 Regulations – Similar to politics, there are several regulations and policies that affect the AHDS. For instance, the AHDS is nested within several campaigns, strategies, and other strategic concepts. Also, any new capabilities needed by USAICOE normally go through the Joint Capabilities Integration Development Systems (JCIDS), the Capabilities Needs Analysis (CNA), and the Army Warfighting Challenge Framework (AWCF). There are other regulatory requirements that affect the AHDS implementation to include Science & Technology (S&T) priorities, defense budget priorities, Army profession campaign, Army leader development strategy, and Army learning concept. The success of the AHDS integration is dependent on the knowledge and integration of the regulations by each stakeholder across the enterprise.

3.1.3 Economy – The changing economy impacts the Army's ability to attract top talent. The Army career is a "lifestyle" decision that does not resonate with many of the younger millennials. Furthermore, only 75% of the U.S. youth population (Age 17-24) qualifies to serve in the military (Bicksler and Nolan 2009). Furthermore, there is a larger "cultural" divide between the American "millennial" generation today. The millennial generation includes individuals born between 1982-2000 and represent more than one-quarter of the nation's population ("Millennials" 2016). The economy impacts the Army's ability to recruit high-performing, intelligent, and motivated individuals for the future Army.

3.1.4 Market – The global threats influence the HDE. While technology will remain a strategic competitive advantage for the United States Army, many of the emerging countries will

be on a level playing field with their military capabilities. For instance, while the global military expenditure increases and U.S. military spending continues to decline. Furthermore, countries like China, Russia, and Saudi Arabia have substantially increased their military expenditure while USA fell by 6.5% in 2014 (Perlo-Freeman et al. 2016).

3.1.5 Technology – Science and Technology (S&T) maturity is one of the key drivers for the AHDS. With advances in S&T, the defense community has been keen on finding technology and methods to optimize the human performance. TRADOC defines human performance optimization as "advances in cognitive, behavioral, and learning sciences will improve critical thinking, increase cognitive and physical performance, foster intuition and social empathy, improve health and stamina, facilitate talent management, enhance leader training, and strengthen unit cohesion" (TRADOC 2014c, 39).

3.2.6 Resource – Figure 13 shows the decline in the defense budget from the fiscal year 2012. More importantly, the Army total obligation authority (TOA) has declined by 22.4% since the fiscal year 2012. In the last fifty years, Research, Development, and Acquisition (RDA) averaged 21.9% of TOA but in FY15, RDA was 17.1% of TOA (Hewitt 2014). As the budget decreases, the Army's budget for advance modernization and R&D for future capabilities is at risk. The resources needed for the implementation of the AHDS will continue to be a challenge as "readiness" is the top priority.
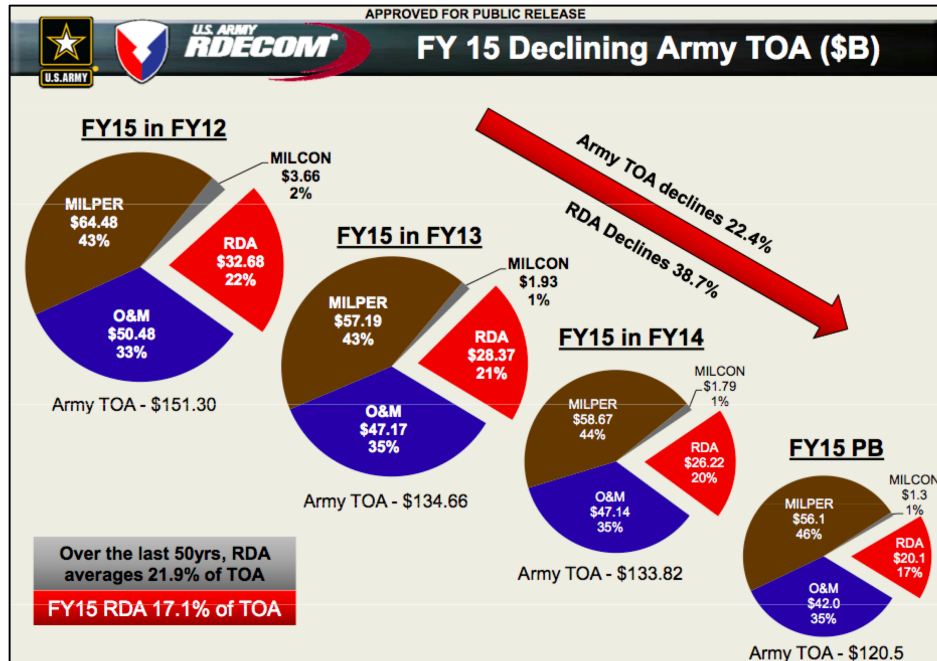
Figure 13: Army RDECOM - Budget Decline Fiscal Year 2015 (Hewitt 2014)

Furthermore, the post-Iraq and Afghanistan war draw down continues to impact the size of the Army. With the significant budget cuts in FY 2013, the Army's end strength decreased from a height of 566,000 in FY 2011 to 490,000 active army soldiers by the end of FY2015. Also, the Army plans to reduce its active personal strength to between 420,000 and 450,000 by FY2017 (National Defense Authorization Act 2016).

Background: The authorized active duty end-strengths[6] for FY2001, enacted in the year prior to the September 11th terrorist attacks, were as follows: Army (480,000), Navy (372,642), Marine Corps (172,600), and Air Force (357,000). Over the next decade, in response to the demands of wars in Iraq and Afghanistan, Congress increased the authorized personnel strength of the Army and Marine Corps. Some of these increases were quite substantial, particularly after FY2006, but Congress began reversing these increases in anticipation of the withdrawal of U.S. forces from Iraq in 2011, the drawdown of U.S. forces in Afghanistan which began in 2012, and budgetary constraints. End-strengths for the Air Force and Navy have been generally declining since 2001. In FY2015, authorized end-strengths were as follows: Army (490,000), Navy (323,600), Marine Corp (184,100), and Air Force (312,980). Given the budgetary outlook, including the future impact of the Budget Control Act of 2011 (BCA), the Army plans to reduce its active personnel strength to between 420,000 and 450,000 by FY2017, while the Marine Corps plans to reduce its active personnel strength to between 175,000 and 182,000 in the FY2017-2019 timeframe.

House-Passed H.R. 1735	Senate-Passed H.R. 1735	P.L. 114-92 (S. 1356)
Section 401 would authorize a total FY2016 active duty end strength of 1,308,915 including	Section 401 would authorize a total FY2016 active duty end strength of 1,305,200 including	Section 401 authorized a total FY2016 active duty end strength of 1,305,200 including
475,000 for the Army 329,200 for the Navy 184,000 for the Marine Corps 320,715 for the Air Force	475,000 for the Army 329,200 for the Navy 184,000 for the Marine Corps 317,000 for the Air Force	475,000 for the Army 329,200 for the Navy 184,000 for the Marine Corps 320,715 for the Air Force
Section 402 would amend 10 USC 691 to set minimum end-strengths as follows:	Section 402 would repeal 10 U.S.C. 691, which sets minimum strengths "necessary to enable the armed forces to fulfill a national defense strategy calling for the United States to be able to successfully conduct two nearly simultaneous major regional contingencies" and requires DOD to submit budget requests sufficient to fund those minimum strengths. It would also change the language in 10 U.S.C 115 to allow the Secretary of Defense and the Service Secretaries to reduce the personnel strength in certain active and reserve component categories below the authorized end-strength by a specified percentage.	Section 402 amended 10 USC 691 to set minimum end-strengths as follows:
475,000 for the Army 329,200 for the Navy 184,000 for the Marine Corps 317,000 for the Air Force		475,000 for the Army 329,200 for the Navy 184,000 for the Marine Corps 317,000 for the Air Force It also modified the authority of the Secretary of Defense, allowing him to decrease these minimum end-strengths by up to 2%.

Figure 14: FY2016 - Active Duty End Strength (National Defense Authorization Act 2016)

3.1.7 Environment – "*How do we make technology work for us, and not against us – especially when it comes to solving urgent challenges like climate change?"*** (Obama 2016*) As "sustainability" becomes at the forefront of national security priorities, this will inevitably impact the HD transformation efforts and the priorities for USAICOE. AHDS should take a proactive approach and innovate programs that are both "sustainable" and increase human performance.

3.1.8 Discussion

The analysis of the enterprise ecosystem helps determine which factors are more influential to the HDE. While all the ecosystem factors impact the HDE, the dominant ecosystem factors are political, technology, and resources. Based on the investigation, the author recommends that the AHDS leadership should take a proactive approach and have mechanisms emplace to anticipate the political, technology, and resource changes. These three factors can significantly impact the successful implementation of the AHDS.   In addition, HD leadership

should anticipate the ongoing change in the allocations of resources, personnel, and priorities for the HDE.

The next section provides the background discussion on the human dimension and summarizes the key human dimension literature. The HD literature highlights the interdependencies and interactions within the HDE.

3.2 Background – The Army's Human Dimension

"The All-Volunteer Army will remain the most highly trained and professional land force in the world. It is uniquely organized with the capability and capacity to provide expeditionary, decisive land power to the Joint Force and ready to perform across the range of military operations to Prevent, Shape, and Win in support of Combatant Commanders to defend the Nation and its interests at home and abroad, both today and against emerging threats." - Army's Strategic Vision (F2025B)

This section provides the recent literature, in chronological order, and the significant events related to the "Human Dimension." A review of the literature helps define the HDE, the internal landscape of the enterprise, and the enterprise capabilities. Additionally, the research highlights the complexity of the HDE with the multiple stakeholders and organizations. The stakeholders "needs" are extrapolated from the literature.

3.2.1 *Operational Environments to 2028: The Strategic Environment for Unified Land Operations* provides the key conditions and threats anticipated in the future strategic environment. The strategy contains multiple operational environments that the future Army may face at different echelons. Ultimately, this strategic paper describes four development implications for the Army in the areas of leader development, training development, capabilities development and concepts development. For leader development, the strategic environment will require agile, culturally aware, and innovative leaders to be able to operate in complexity (TRADOC 2012).

3.2.2 Army Human Dimension Concept (AHDC) provides a framework for "how the future Army must select, develop, sustain, and transition Soldiers and Army Civilians to prevent, shape, and win in the 21st century" (TRADOC 2014c). The concept defines the cognitive, physical, and social components as the parameters for the human dimension. Furthermore, the

human dimension concept articulates the importance of integrating the advances of science and technology (S&T) for the Army's competitive advantage.

3.2.3 Force 2025 and Beyond (F2025B) establishes a comprehensive modernization strategy for the Army of 2025 and Beyond. Furthermore, the F2025B purpose is to synchronize and integrate across the Army enterprise to "Win in a Complex World." This document also establishes TRADOC Commanding General as the lead "architect" for future forces development.   The F2025B concept introduces the need for optimizing individual and team performance (U.S. ARCIC 2014).

3.2.4 Army Operating Concept (AOC) describes how the Army will operate in uncertain and complex future environment (TRADOC 2014a). This concept provides the strategic context and foundation for Force 2025B and the Human Dimension Concept. Furthermore, the AOC defines a requirement for optimizing human performance as one of the ten fundamental principles for the future Army (TRADOC, 2014a).

3.2.5 The Human Dimension White Paper (2014) outlines a common framework for implementing the Army human dimension concept across three components – cognitive, physical, and social. The white paper's intent is to stimulate dialogue between government, academia, and science and technology community to tackle the new challenge. However, some critics downplay the importance of the strategy because there is nothing innovative about the human dimension strategy. For instance, education, training, and leader development have always been essential for the Army. The white paper establishes "cognitive dominance," "realistic training", and "institutional agility" as the key approaches for optimizing human performance and elevates the importance of the individual. Furthermore, this document outlines governance structure among the key stakeholders and decision makers (U.S. Combined Arms Center 2014).

3.2.6 Human Systems Conference focuses on the theme "Human Systems: Maintaining our physical edge, enabling our cognitive edge."   The National Defense Industrial Association (NDIA) hosted conference included participants from government, academia, and industry. The topics included: HSI in DoD requirements, System Interface and Cognitive Processing,

Protection, Sustainment, and Physical Performance (PSPP), Personnel, Training, and Leadership Development (PTLD), and Social, Cultural Behavior Understanding (SCBU). The fifth topic explored the Human Systems Integration (HIS) metrics and metrics for assessing human-system solutions (Human Systems Conference 2015).

3.2.7 Cognitive Dominance Symposiums – Under TRADOC, the combined arms center (CAC) hosted a cognitive dominance symposium with 284 participants from academia, industry, military, and international military. The agenda focused on the "cognitive dominance" line of effort to include brain health, brain development, trust, and cognitive biases/decision making (Cognitive Dominance Symposium 2015).

3.2.8 Army Human Dimension Strategy (AHDS) synchronizes and integrates multiple Army HD efforts into one strategy. The basis of this research begins with this strategy while trying to reduce ambiguity, complexity, and uncertainty. AHDS organizes specific human dimension activities by lines of efforts and assigns responsibility for integration. The AHDS largest contribution to the HDE are the enterprise goals. The first goal is to optimize the human performance of every Soldier and Army Civilian in the total force. The second is to build cohesive teams of trusted professionals that thrive in chaos and ambiguity (U.S. Army Combined Arms Center 2015). The research extends the AHDS by applying a systems approach with the ARIES framework for analysis.

3.2.9 Mad Scientist Conference 2015: Human Dimension 2025 and Beyond was held on October 27, 2015. The U.S. Training and Doctrine Command's G-2 and the U.S. Army Combined Arms Center partner hosted the conference on the theme of "Building Cohesive Teams to Win in a Complex World." The topics included – "Far future advances in neuroscience to optimize human performance, institution of the future, shaping the future" (Mad Scientist Conference 2015). This conference is directly related to the HDE goals.

3.2.10 Discussion

The human dimension literature review provides the strategic context that USAICOE operates within the HDE. It also facilitates defining the "ill-structured" state of the HDE. In addition, the chronology of the HD publications identifies the key shortfalls that need to be

addressed for the future. In the next section, the HD literature review assists with the development of the "needs" of the HDE and identifies the existing capabilities of the HDE.   The analysis of the current capabilities helps determine whether or not the enterprise is moving towards the envisioned future.

3.3 Enterprise Level 1.0

In the previous section, the literature review provides the context for the HDE needs, goals, and capabilities. While the HDE does not exist formally as an organization, the internal landscape of the HD enterprise can be defined by investigating the enterprise elements, understanding the motivation for change, and determining the current capabilities (Nightingale and Rhodes 2015, 33). Furthermore, an informal discussion with stakeholders enhances the understanding the HDE current transformation.

3.4 HD Enterprise – "Needs" Analysis

In Table 6, the human dimension literature review plays an instrumental role in extrapolating the HDE's future "needs." These derived needs and capabilities will be essential for understanding the interactions and influences at the next lower level at USAICOE.

Table 6: Human Dimension Enterprise "Needs"

Event / Date	Derived HDE "Needs" / Future Capabilities
Operational Environment to 2028 August 2012	Ability to adapt to the future operational environment
Human Dimension Concept May 2014	Ability to understand cognitive, physical, and social components; Integration of science and technology (S&T)
Force 2025 and Beyond (F2025B) October 2014	Interoperability and synchronization with other strategies; ability to integrate into a common modernization strategy
Army Operating Concept (AOC) October 2014	Optimizing human performance as one of the the ten fundamental principles for the future Army
Human Dimension White Paper October 2014	Ability to establish "cognitive dominance," "realistic training," "institutional agility;" elevates the importance of the individual; human dimension governance structure and process
Human System Conference February 2015	Collaborates with government, academic, and industry; establishes metrics for assessing human system
Cognitive Dominance Symposium April 2015	Synchronizes cognitive dominance efforts – brain health, brain development, trust, and cognitive biases / decision making
Army Human Dimension Strategy June 2015	Synchronizes and integrates multiple Army efforts; provides the strategic vision, objective, key tasks
Mad Scientist Conference October 2015	Builds cohesive teams to win in a complex world – discussion of advances in neuroscience to optimize human performance

The high-level needs from the ecosystem are drivers of the enterprise value creation. These "needs" are essentially capability requirements for the future HDE. Based on the literature review and the author's assessment, the needed HDE future capabilities are the following:

- Agility – ability to shift strategies to adapt to the future operational environment

- Adaptability - integrate the latest advances in S&T and adapt to the future operational environment

- Visibility - allow synchronization and integration across Army - academia, government, and S&T community

- Measurability – the ability to assess, monitor, and improve cognitive, physical, social components of human performance

In addition to capabilities, the HDE needs include:

- Establish governance structure and process

- Metrics for assessing human performance

- Leader development and socialization of the Army Profession

- Characteristics of individuals: Adaptive and innovate leaders

3.5 HD Enterprise Capabilities

Table 7: Enterprise Capabilities (Nightingale and Rhodes, 2015)

Enterprise Capabilities (ilities) Definitions (Nightingale and Rhodes, 2015)	
Adaptability	Ability of an enterprise to sustain value delivery by transforming itself to respond to changes in its ecosystem
Agility	Ability of an enterprise to shift rapidly from one strategy to another to sustain enterprise value delivery
Competitiveness	Ability of an enterprise to deliver products and/or services providing value to stakeholders perceived as equal to or greater than competing enterprises
Evolvability	Capacity of an enterprise transform by leveraging successful features of the current architecture
Replicability	Ability to reproduce enterprise entities (e.g., processes, products/services, business units) effectively to create or sustain value delivery
Resilience	Ability of enterprise to cope effectively with changing circumstances and recover from disruptive events
Responsiveness	Ability to respond in a timely and effective way to emergent stakeholder needs, threats, and opportunities
Robustness	Ability to sustain consistent value delivery in spite of changes and perturbations in the enterprise ecosystem
Scalability	Ability to expand or contract the enterprise to meet changing circumstances in order to sustain value delivery
Sustainability	Capacity of enterprise to endure over time as related to environmental, economic, and/or social dimensions

Enterprise capabilities are unique to the enterprise and often, difficult to identify due to different interpretations from various stakeholders. Nightingale and Rhodes define enterprise capabilities as the "system properties that provide the ability to perform, and to respond to challenges and opportunities in a certain way" (2015, 37). An informal discussion with key stakeholders outlined the main capabilities required from the HDE. By focusing on these capabilities, this provides the baseline and direction for architecting the enterprise transformation.

Similar to the HD literature review, a stakeholder discussion with a senior member of HDE level organization enhanced the understanding of the key capabilities needed by the HDE - *adaptability, agility, visibility, and measurability*. The HDE needs the following capabilities:

• **Adaptability** is the ability of the enterprise to adapt readily to the future operational environment by integrating the latest advances in S&T. This capability is especially important when applying the latest technologies to optimize human performance.   An adaptive enterprise gives its organizations and people flexibility and time to capture more value and operate in uncertainty, ambiguity, and complexity.

• **Agility** is the ability for the HDE to shift from one strategy to another. A more agile enterprise will be able to capture more synergies across the enterprise with the sharing of best practices, working groups, and knowledge management.

• **Visibility** is the ability to capture the current best practices, lessons learned, collaborations with academic, and industry. The enterprise must be able to see across systems boundaries and ensure that the value is being captured at the interfaces because the stakeholders at the lower level have even less visibility on best practices and access to other resources.

• **Measurability** – the ability to assess, monitor, and improve cognitive, physical, social components of human performance.

Chapter 4: Stakeholder Analysis

This chapter identifies the value path across the levels of the HDE using a stakeholder analysis. The stakeholder analysis distinguishes the types of stakeholders and segments the stakeholders into different groups based on their needs. The stakeholder analysis provides the necessary context for understanding USAICOE's current state in the next chapter.

4.1 Human Dimension Enterprise Stakeholders

As previously discussed, the HDE is a "system of systems." The ability to deliver "optimized human performance" as an output of the HD complex system depends on the integration and alignment of the other independent systems. The overall need for the HDE is the integration and synchronization of the all the stakeholders towards optimizing human performance for the Army.

The first step of the stakeholder analysis is to identify all the HDE stakeholders denoted in Figure 15. The research segments the stakeholders into three levels: enterprise, organization, and individual. The "levels" abstraction reduces the HDE complexity and assists with identifying the "misalignments" in the enterprise. Each level helps with the understanding of the HD transformation from the high-level "needs" to the individual requirements. This research investigates the interactions within the enterprise level, USAICOE, and the individual level.
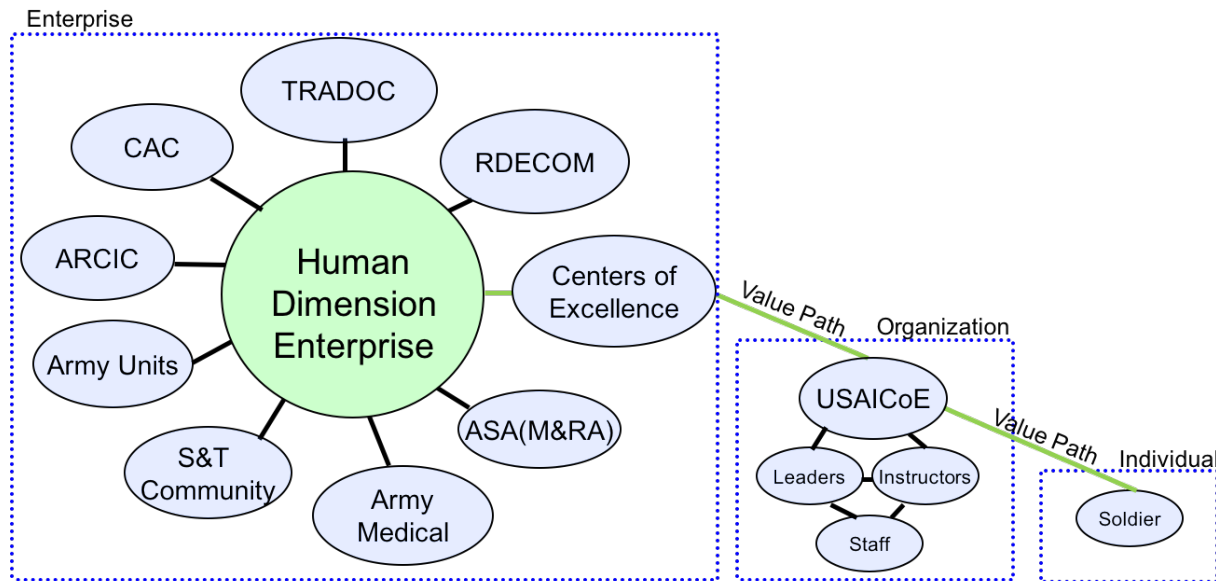
Value of Enterprise: Optimize Human Performance

Figure 15: Enterprise Stakeholders

The HDE Enterprise Level Stakeholders:

- **Training and Doctrine Command (TRADOC)** – TRADOC provides oversight for the Army's education and training. They are the enterprise decision maker for the future of the Army. TRADOC is the lead organization that develops, designs, builds, and integrates new capabilities, organizations, and equipment (About TRADOC). In this organization, high-level strategies like the AHDS (2014) are conceptualized. TRADOC provides the strategic direction and priorities for the HDE. The TRADOC Commanding General (CG) serves on the Army Human Dimension Steering Committee (U.S. Combined Arms Center 2015, 10).

- **Combined Arms Center (CAC)**- CAC is the "Intellectual Center of the Army" and is a major subordinate headquarters of TRADOC. CAC "develops and integrates Army leader development, doctrine, education, lessons learned, functional training, training support, training development, and proponent responsibilities in order to support mission command and prepare the Army to successfully conduct unified land operations in a joint, inter-agency, inter-governmental, multinational environment (About CAC 2016). At the current state, CAC is the "operator" for the HDE. CAC interfaces with the centers of excellence to transform the enterprise to meet emerging threats. The CAC develops strategies like the Army Human Dimension Strategy. The Human Dimension Capabilities Development Task

Force (HD CDTF) is tasked with "operationalizing" the AHDC and resides within the CAC. Additionally, the CAC CG serves on the Human Dimension Council.

- **Army Capabilities and Integration Center (ARCIC)** – ARCIC is responsible for developing Army concepts for the future operational environment. ARCIC's mission is to "develop, evaluate, and integrate concepts, requirements, and solutions for the Army across DOTMPLF, warfighting function, and formations" (About ARCIC 2016). Additionally, the ARCIC CG serves on the Human Dimension Council.

- **Army Research, Development and Engineering Command (RDECOM)-** RDECOM is a supporting organization for the HDE. RDECOM conducts research and development of technologies for the Army. RDECOM's mission is to "ensure decisive capabilities for unified land operations to empower the Army, the joint warfighter and our nation now and through 2040." (About REDCOM 2016). The HDE provides the technical requirements for HD-related capabilities to RDECOM and in return, RDECOM provides technology solutions.

- **Centers of Excellence (COE) –** There are eight COEs under TRADOC – Mission Command, Intelligence, Cyber, Aviation, Fires, Maneuver, Maneuver Support, and Sustainment. All eight COEs are subordinate functional commands of TRADOC responsible for education, training, and future force development within their respective "warfighting" functions. This research proposes that the COE are high leverage points for change and acts as "operators" within the HDE rather than as a supporting organization. COE has the potential to provide high value towards the HD transformation efforts.

- **Assistant Secretary of the Army Manpower and Reserve Affairs (M&RA) -** ASA (M&RA) is an "organizational decision maker" serving at the highest level for the Army's human capital enterprise. ASA(M&RA) provides oversight and direction for the Army's total force management, manpower, and workforce management programs (About ASA M&RA 2016). ASA (M&RA) serves at the highest level of decision making for the HDE and as a member of the human dimension council.

- **Army Units –** The Army units represent the active military units at the divisional level and below. The Army units are "war fighting" deployable units. They are the end users and direct beneficiary of the human dimension strategy. The value of optimized human performance will increase the readiness of soldiers and the warfighting units. The Army unit is one of the primary beneficiaries of the HDE.

- **Army Medical Community** – The Army medical community provides medical expertise related to the social, cognitive, physical components of the individual. The Army medical community develops programs like the Performance Triad (P3) to address the challenges outlined by the AHDS.

- **Science and Technology Community (S&T)** – This community is responsible for the development of technology for the future capabilities required by AHDS. With the AHDS, the S&T community focuses on non-materiel solutions such as human capability development, leader development, talent management, operational application, and clinical applications (U.S. Army Combined Arms Center 2015, 11)

4.2 Beneficiaries and Stakeholders

The HDE stakeholders can be characterized as beneficial, charitable, or problem stakeholders (Crawley, Cameron, Selva 2015). Crawley describes that the beneficial stakeholders receive and give while the problem stakeholders provide resources, but get minimal or no benefit (2015). In other words, the beneficial stakeholder receives value from the output of the enterprise. Charitable beneficiaries reap the benefits of the enterprise but do not provide any resources (Crawley, Cameron, Selva 2015). Problem stakeholders are defined as those stakeholders who provides resources to the system under consideration, but who derive little or no benefit from the system (Crawley, Cameron, Selva 2015). In Figure 16, the HDE enterprise level stakeholders are categorized as charitable, beneficial, or problem stakeholders.
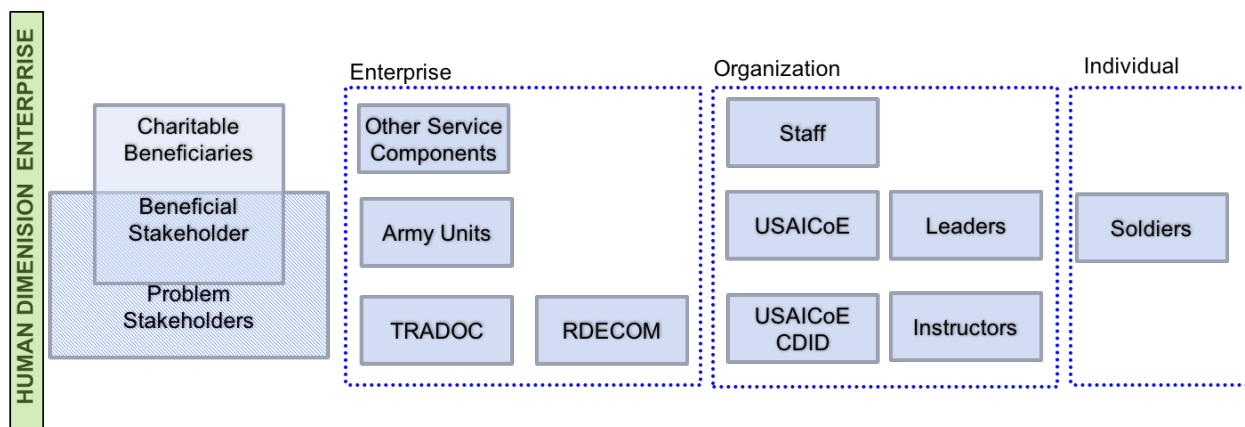
Figure 16: Qualitative Assessment - Stakeholders & Beneficiaries

The primary beneficiaries for the HDE are the individuals and the Army units. They are the end user of the system and maximize the most benefits of the HDE system.

55

4.3 Stakeholder Group Segmentation

All the HDE stakeholders can be categorized into different groups or segments. This is another method to reduce complexity in the HDE. It helps understand the influences of a stakeholder group. Figure 16 depicts the stakeholders across the three levels of the HDE and their segmentation group. Based on the investigation, the USAICOE CDID and Instructors gain little value from the HDE when "operationalizing" the AHDS into practice.

End User: This group of stakeholders directly consume the value of the HDE and maximizes the value from optimized human performance. The HDE value of optimized human performance will increase the readiness of soldiers and the warfighting army units. The Army units and individuals are the direct beneficiary of the HDE.

Operator: The operators are individuals and organizations that directly impact the successful implementation of the AHDS. Operators include the ARCIC, CAC, COE, Army HD program manager, Army HD capability development task force, USAICOE CDID, and USAICOE instructors. While this group of operators does not directly benefit from the value of the HDE, they are high leverage points for the HDE system.

Support: This group of stakeholders has other vested priorities than the AHDS. While this group "supports" the HD transformation efforts, they gain minimal value from the HDE. The support group is usually highly specialized in a certain domain like science & technology, and medical. This group includes the S&T community, Medical community, RDECOM, and DoD – other services.

Decision Maker: The ASA (M&RA), ARCIC CG, and CAC CG make up the human dimension council that is responsible for the oversight of the human dimension efforts across the defense enterprise (U.S. Combined Arms Center 2014). This group of decision makers provides direction, priorities, and integration of HD efforts across organizational boundaries.

Table 8: HDE Segmentation of Stakeholders

	Segmentation Group	Stakeholders	Beneficial / Charitable / Problem
Enterprise Level 1.0	Decision Maker	Human Dimension Steering Committee	Beneficial
	Decision Maker	Human Dimension Council	Beneficial
	Decision Maker	ASA (M&RA)	Beneficial
	Decision Maker	ASA (ALT)	Beneficial
	Decision Maker	TRADOC	Problem
	Operator	Combined Arms Command	Beneficial
	Operator	Army Human Dimension Program Manager	Beneficial
	Operator	Army Human Dimension Capability Development Task Force	Beneficial
	Operator / Supporting Organization	Centers Of Excellence	Beneficial
	Support	Science and Technology Community	Beneficial
	Support	RDECOM	Beneficial
	Support	Human Dimension Research	Beneficial
	Support	Army Medical Community	Beneficial
	Support	DoD - other services (Air Force, Navy, Marines, Coast Guard)	Charitable
	Support	ARCIC	Charitable
	User	Army Units	**Beneficial (Primary)**
Org. Level 2.0	Operator	**USAICoE**	Beneficial
	Operator	USAICoE CDID	Problem
	Operator	Instructors	Problem
	Decision Maker	Leaders	Beneficial
	Support	Staff	Charitable
	User	Individual soldier	**Beneficial (Primary)**
Individual Level 3.0	User	**Individual soldier**	**Beneficial (Primary)**
	Support	Cognitive Component	Charitable
	Support	Social Component	Charitable
	Support	Physical Component	Charitable

The next section will map the value exchange between the three levels of the HDE.

4.4 Enterprise Stakeholder Value Exchange

Human Dimension Value Network
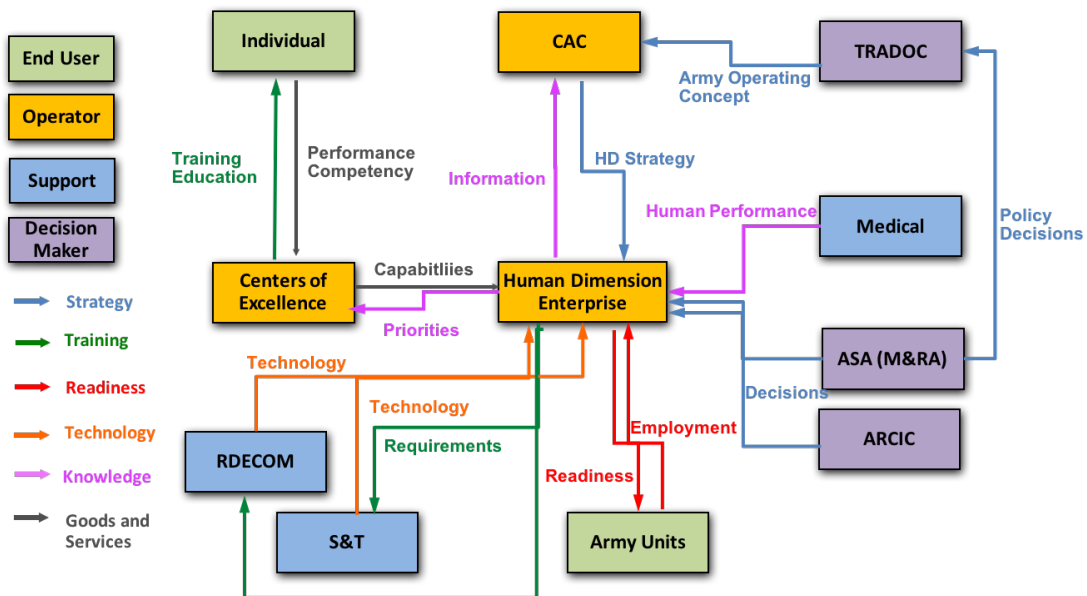
Figure 17: Human Dimension Value Network

Figure 17 depicts the value exchange within the enterprise system.   The value network shows that the HDE receives value inputs including technology, capabilities, human performance-related programs, strategy, decisions, organization structure, and people. The HDE receives value from each of the stakeholders, but HDE delivers minimal value to the larger enterprise. HDE value delivery (output) includes priorities, information, requirements, and readiness. While the HDE require many types of value inflow, one of the major key insight is that the stakeholders are independent of HDE.   Based on the HD value network, the figure might imply that the AHDS has minimal impact and direct control over the HDE stakeholders.

4.5 Discussion

The HDE is an ambiguous and complex problem that requires multiple stakeholders at various levels to align their organizations, processes, metrics, and values down to the lowest level for a successful enterprise transformation. The implementation of the human dimension strategy requires alignment of levels, value creation and value capture as depicted in Figure 18.

Human Dimension Enterprise as "Complex System"

Level	Value Expected	Stakeholders	Value Contributed	Importance to Value Creation	Current Performance
Enterprise Level 1.0 Enterprise	•Creative Thinking •Enterprise Performance •Assessment •Feedback •Best Practices •Major issues •Strategies, Concepts, Capabilities •Create and evaluate AHDS initiatives	• Human Dimension Steering Committee, Human Dimension Council, Army Human Dimension Capability Development, Army Human Dimension Program Manager • Army Units •RDECOM •S&T Community •Medical Community	• Strategic direction • Priorities • Coordination • Budget allocation • Senior-level direction • Oversight • Synchronization/ Integration • Capabilities Integration • Future Force Development • Enterprise Level Capabilities / "Institutional Agility"	•Low relative to the individual based on the AHDS. The individual is the most important resource	•High – The bulk of the initiatives, analysis, and work is done at this enterprise level. The AHDS is not being implemented and integrated at the lowest level.
USAICoE 2.0 Organization	•Creative Thinking •Training, education, •Future Force Development •Gaps Identified • Analyze and Apply AHDS Initiatives	•Leaders •Staff - CDID •Instructors •Individual	• Integration of functional efforts • Operations • Training, Education • Current research • Gaps, potential solutions • Organization Capabilities	•Medium - drives the enterprise. Balances the trade offs between value creation and value capture	•Medium – The organization is focused on "readiness" and AHDS has not "really changed" at the organizational level. •Several new initiatives/programs by USAICOE such as Cognitive Enhancement Program, Instructor training, Leader Development
Individual 3.0 Individual	• Creative Thinking • Assessments / Tools • Quality education, motivated instructors, • Knowledge, skills, assessment • User feedback • Understand and Remember AHDS Initiatives	• Social Component • Physical Component • Cognitive Component	• Learning, training, knowledge, skills, motivation, team performance • Individual Competency	•High - the individual students are the most important, but least understood. Value creation happens at the individual level	•Low - Few quantifiable metrics to gauge the understanding of the individual. Each individual is unique. • 50% of captains at the career course has not heard of the HD strategy • "Nothing has really changed" with AHDS

Figure 18: Enterprise Value Exchange

The mapping of the enterprise value exchange shows the value across the interaction between the three levels within the HDE. The macro view represents the HDE as a "complex system" and illustrates the difference in the value contributed and its respective performance at each level. At the enterprise level, the current performance is high while the importance of the value creation is relatively small in comparison to the individual. Within the organizational level, USAICOE is neither performing high or low. One can describe the performance as a "status quo" or only marginally impacted by the AHDS. At the individual level, the individual performance is low; but the individual is the most important to the value creation of the Army HDE. It seems that the AHDS is not effectively being translated across the interfaces to the lowest level. However, the overall success of the human dimension transformation is dependent on the performance at the individual level.

In the next chapter, a case study on USAICOE (level 2.0) explores the relationship and interactions internally within USAICOE. The research examines the external interactions between HDE level - USAICOE and USAICOE – Individual level. The author proposes using the interfaces of USAICOE to identify the areas of misalignment and opportunities for transformation.

Chapter 5: USAICOE Enterprise Case Study

This chapter analyzes USAICOE (level 2.0) as a case study. Through the analysis of USAICOE, the author hopes to gain insights that could be useful for integrating the AHDS to the other COEs. The analysis of USAICOE serves as an "indicator" of the current state of the AHDS transformation. The research investigates the value creation at each level of the HDE and identifies any misalignments in the multi-level enterprise.

This chapter defines the current state of USAICOE by analyzing the enterprise element model from the ARIES framework. The research focuses on the internal stakeholders of USAICOE and the interactions at the interfaces. A stakeholder value map captures how well the enterprise is delivering value for the multiple stakeholders at each level. Based on the earlier enterprise level stakeholder analysis, USAICOE, CDID, and the instructors were identified as the leverage points for transformation.

The intent of this chapter is to identify the current state of USAICOE and provide recommendations to integrate the Human Dimension Strategy to USAICOE.

5.1 Scope and Boundary of the Enterprise

The first step of analyzing a complex system is to identify the boundary of the system. In Figure 19, the author defines USAICOE's upper boundary as the Capabilities Development and Integration Directorate (CDID) and the instructors as the lower boundary interface. At the upper boundary, the AHDS integration begins with CDID's ability to translate the strategy into practice for USAICOE. At the lower level of the system boundary, instructors' interactions with the individual students (soldiers) directly impact the AHDS integration. Everything outside of the system boundary is beyond the control of USAICOE, but the ecosystem factors (externalities) continue to influence the entire enterprise.
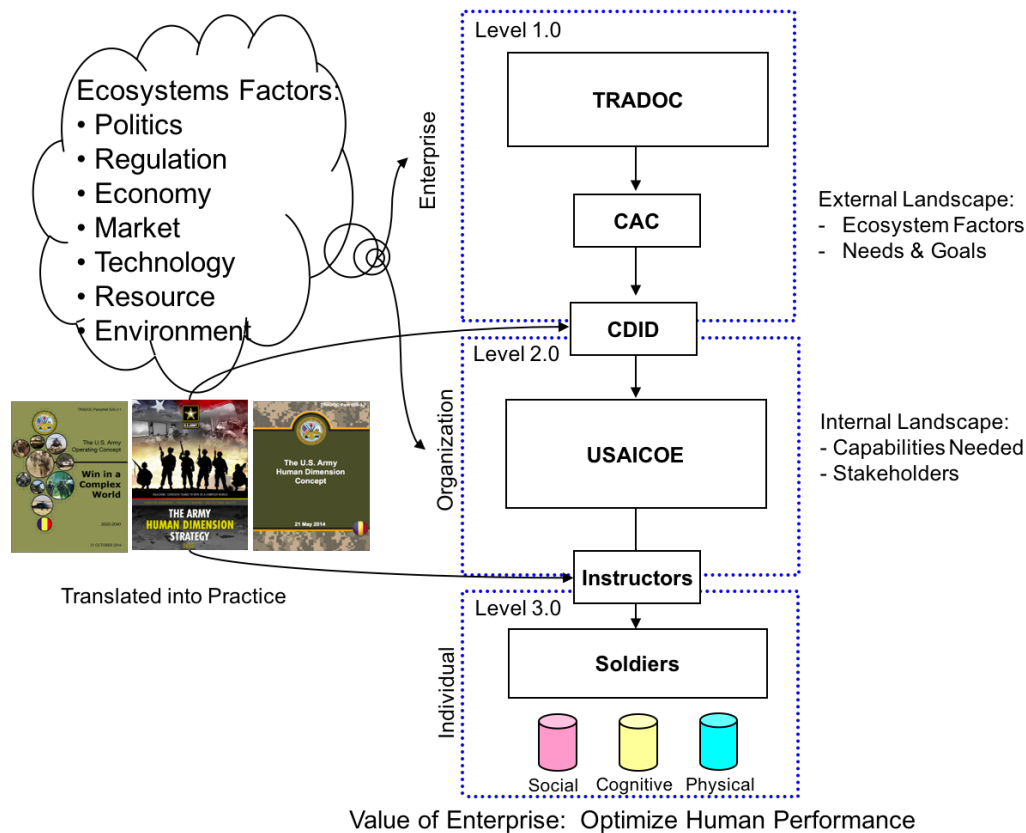
Figure 19: Enterprise Scope and Boundary

5.2 U.S. Army Intelligence Center of Excellence (USAICOE) as the Enterprise

"Fort Huachuca must continue to meet the demands of any future conflict or contingency by developing capabilities to create agile and adaptive leaders and Soldiers to prevent conflict, shape the environment, and win our nation's wars." – Major General Robert P. Ashley (former USAICOE Commanding General)

An enterprise's purpose is to create and capture value.   Value is the "utility, benefit, reward that is exchange for the contribution to the enterprise" (Nightingale and Srinivasan 2011, 260). USAICOE, as an enterprise, delivers value to the larger Army enterprise by providing training, education, and future force development.

This research proposes that the HDE only captures value when the subordinate levels align with the AHDS. As previously described in Chapter 1, USAICOE can be viewed as one of the strategic functional interfaces between Army enterprise and the future readiness of soldiers. Due to its organizational responsibilities and position, USAICOE plays an instrumental role in

translating Army-level strategies like AHDS down to the individual level, the Soldier. These centers of excellence are helpful for adapting to the changing requirements of the enterprise and ultimately, building a more capable future Army.
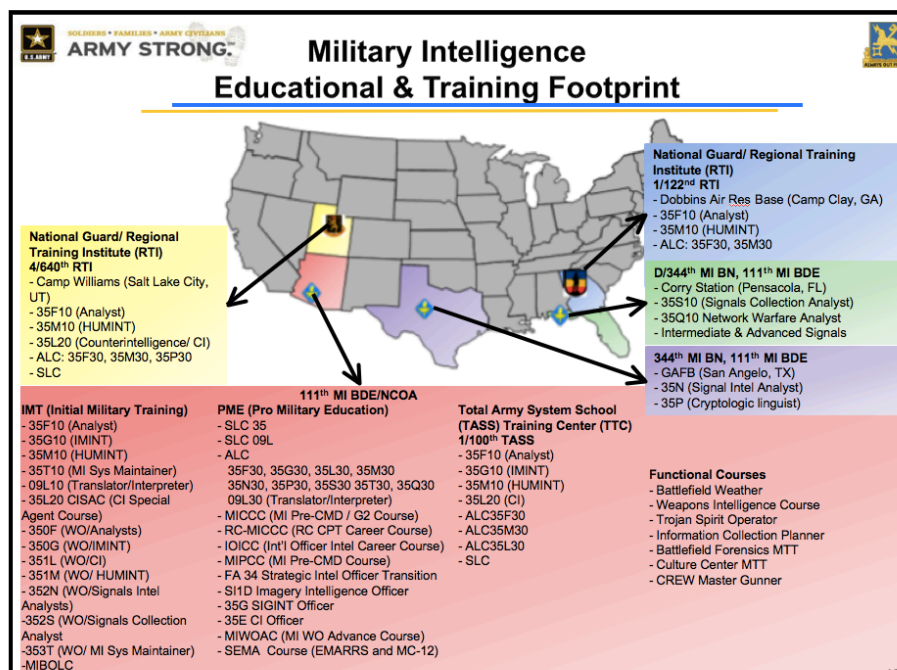
Figure 20: Intelligence Education and Training (USAICOE Command Overview n.d.)

USAICOE designs, develops, and integrates intelligence capabilities, concepts, and doctrine in support of Unified Land Operations" (Department of the Army G2, 2014). Also, USAICOE manages the training, education, and future force development for military intelligence professionals for U.S. Army Active Duty, Reserve, and National Guard (USAICOE Strategic Plan 2015). The onus is on USAICOE, specifically the CDID and instructors to integrate the Army enterprise level strategies and best practices into the current training and education at Fort Huachuca.

For the HDE transformation, the AHDS needs to be integrated with USAICOE strategic plan. The next section describes the strategic objectives of USAICOE, which will be discussed later during the X-Matrix analysis.

5.2.1 USAICOE's Strategic Objectives

"Every enterprise must periodically undergo transformation as it evolves and adapts to an ever-changing world" (Rhodes 2015)

As the world evolves, the United States Army Intelligence Center of Excellence (USAICOE) must continue to transform and adapt to changing requirements of its ecosystem. At the organizational level, one method of adapting and translating Army level strategy is the publication of the USAICOE strategic plan. The strategic plan serves as a near-term strategy for prioritizing and synching current efforts for the future direction of military intelligence professionals. In 2015, USAICOE published the Strategic Plan 2015-2020 with three major lines of effort and eleven measurable objectives. While the human dimension strategy applies to the entire strategic plan lines of effort (LOE), the scope of the research analyzes the training, education, and future force development (LOE 2 and LOE 3).

The research investigation shows that the USAICOE strategic plan is nested with the AHDS. The Human Dimension strategy is directly applicable to LOE 2, MO 6, LOE 3, MO 9 – Evolve and Update Intelligence Doctrine.
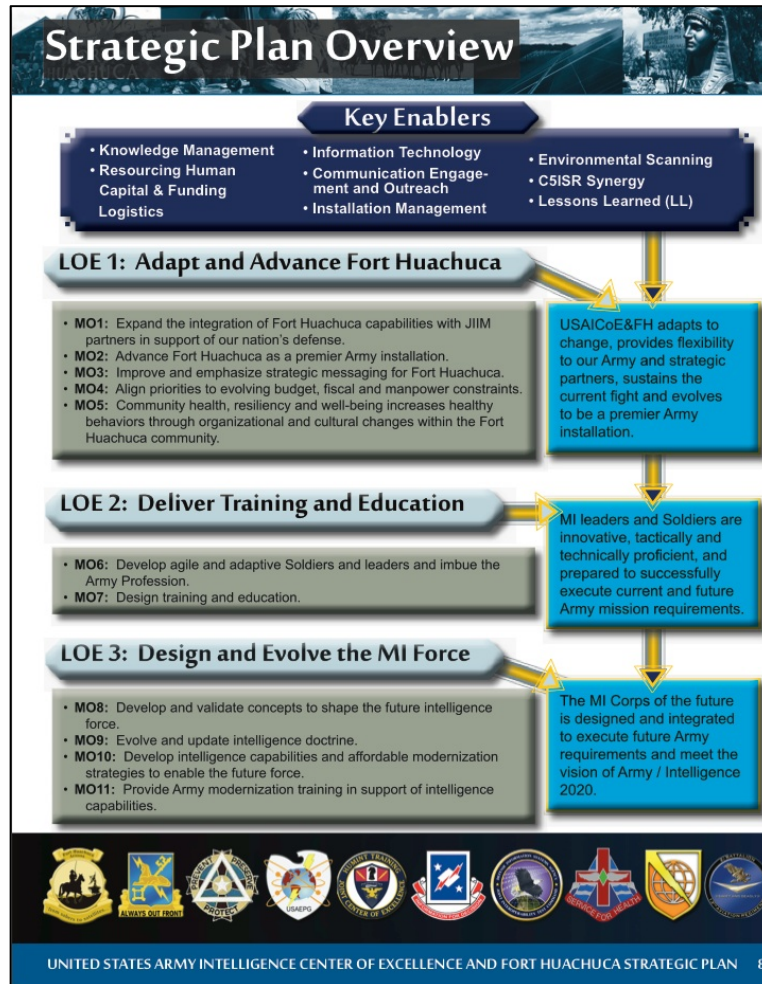
Figure 21: USAICOE Strategic Plan 2015-2020 (USAICOE Strategic Plan 2015)

LOE 2 – Deliver Training and Education

Subtask 6e: Optimize human performance

"Optimize the human performance of every Soldier and Civilian engaged in MI training across each Military Occupational Specialty (MOS) and each echelon of Professional Military Education (PME); both students and instructors." (Strategic Plan 2015)

LOE 3 – Design and Evolve the MI Force

Subtask 9b: Evolve and Update Intelligence Doctrine

"Focus and prioritized Human Dimension Programs to help doctrine prepare the operational force for complex and ambiguous environments. Create formats, search tools, and user interfaces for the operational force to maintain relevancy with the OE." (Strategic Plan 2015)

At the higher level of USAICOE, the AHDS is well-integrated into the strategic objectives of the USAICOE's organization. Furthermore, the USAICOE strategic plan designates the Capabilities Development Integration Directorate (CDID) responsible for the Human Dimension Strategy integration. Currently, LOE 2 and LOE 3 consist of challenging tasks to implement, measure, and monitor especially, in the field of cognitive science. As denoted in above, subtasks 6e and 9b, both tasks show the integration of human dimension strategy in USAICOE's strategic plan.

By conducting a "deep dive" analysis on USAICOE as one of the centers excellence, the author hopes to capture key insights and best practices that could be replicated at the other centers of excellence. One of the objectives of this research is to identify the capabilities needed for the HDE enterprise system to measure the human dimension efforts across multi-levels of the enterprise.

5.2.2 USAICOE Enterprise Capabilities: What are the capabilities needed?

Enterprise capabilities are intended to provide a consensus among shareholders and reflect the ease that a transformation can be achieved (Nightingale and Rhodes 2015, 39). After reviewing the Army Intelligence Warfighting Strategy, USAICOE Strategic Plan 2015, and stakeholder discussions, USAICOE's critical capabilities are adaptability and agility.

Adaptability – USAICOE is constantly adapting the emerging requirements from its ecosystem. Using a proactive approach, USAICOE looks toward TRADOC and CAC for an understanding of the emerging challenges and threats. The ability for USAICOE to "pivot" strategy hinges upon the organization working relationship, established processes, and transparency across the enterprise.

Agility - Despite changes in the ecosystem, USAICOE must be able to endure over time and deliver sustain value to individuals and the higher Army enterprise. While USAICOE's top priority is to support "readiness," the goal is to adapt proactively to emerging future and challenges.

In the next section, a more in-depth analysis of USAICOE (level 2.0) explores the relationship and interactions between HDE and USAICOE and USAICOE and the individual student (primary beneficiary). For simplicity, the term student is synonymous with the individual.

5.3 Internal Stakeholders Analysis (Organizational Level 2.0)

Using USAICOE as an illustrative case study, the primary stakeholders or beneficiaries of the HDE are the individual students attending USAICOE. Students include initial, advanced, and specially designated military training and education for both enlisted and officers. The HDE total performance is dependent on each individual's ability to execute human dimension tasks to standard. As discussed, USAICOE's overall purpose is to educate, train, and develop the future intelligence professionals. USAICOE's role is to ensure that best practices, instructors, and learning models are used to create adaptive, creative, and agile intelligence professionals.
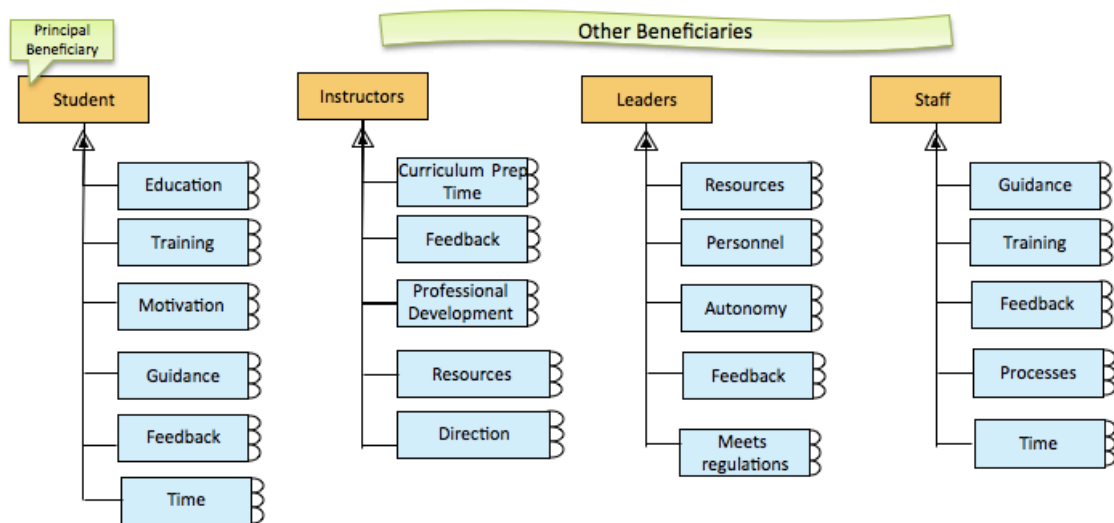
Figure 22: USAICOE Beneficiaries and Needs

Figure 22 shows the primary beneficiary as the student. The student or individual (including enlisted, and officer) requires education, training, motivation, guidance, feedback, and most importantly, time. The value of the USAICOE derives from the ability of the individual to the maximize the difference between Army's standards and actual performance. The individual goal is always to exceed the standard and achieve excellence.

The students are the most important for value creation, but little to no value is captured on how individual students' performance have improved based on the AHDS. For instance, the AHDS outlines five supporting objectives and fourteen key tasks for establishing cognitive dominance (see Annex B for details). This case study explores how the AHDS impacts

USAICOE to deliver its value to the lowest level. The initial findings show that the AHDS has marginally impacted the day-to-day operations at USAICOE.

At the individual level, the value produced is often challenging and complex to measure, monitor, and control. This further amplifies the need to identify tools and methods to measure cognitive performance at the individual level. Individual assessment and understanding of the metrics for human performance remain a challenge.

In the next section, the case study investigates the internal stakeholder groups within USAICOE.

5.3.1 Stakeholder Descriptions

USAICOE stakeholders are segmented into four groups.

- **Students** – Enlisted and officers consume the resources and are the output of the system. One could describe this as a small "tactical" win at the lowest level.

- **Instructors** - Instructors are responsible for the day-to-day operations providing education and training to the students (individual soldiers). Instructors are one of the greatest leverage points that has monumental impact on all attributes of the soldiers including readiness, retention, knowledge, skills, and even motivation. Based on a stakeholder discussion, on average, each military intelligence captain career instructors have approximately 50-80 students in their respective section.

- **Staff** – Staff members are the human capital that is required to make the civilians into professional soldiers and officers into intelligence professionals. Staff includes administrators, advisors, and day-to-day employees.   A key focus of this research was analyzing Capabilities Determination and Integration Directorate (CDID) as the interface across the USAICOE's system boundary.

- **Leaders** – Leaders are the organizational decision makers. In the Army, leaders are usually your "commanders" and other position of leadership.   At USAICOE, these leaders include the Commanding General, 111th MI BDE, 304th MI battalion, and the multiple company commanders at Fort Huachuca, AZ. These "commanders" are responsible for the overall health, morale, and well-being of the soldier, training, mission readiness, budget, resource allocation, and equipment. These leaders address the tradeoffs in the mission, assess risk,

and responsible for the training and education of future soldiers. Commanders are also the beneficiary in the form of training, education, and readiness.

5.4 Stakeholder Value Mapping

The stakeholder value maps capture how well each stakeholder group is meeting the needs at each level of the HDE.   The stakeholder value maps are derived using a literature review and with stakeholder discussions.

5.4.1 Organization: USAICOE

USAICOE is performing well in meeting the "readiness" in the training and education of the students at Fort Huachuca, AZ. The training and education integrate the latest lessons learned from the current theater of operations like Iraq and Afghanistan. USAICOE could improve its "agility" in shifting to new strategies. Also, USAICoE performs relatively well on "adaptability." USAICOE's strategic plan integrates the AHDS in their organizational objectives.

In Figure 23, USAICOE has two capabilities needed for improvement – visibility and measurability. An increase in visibility is necessary for USAICOE to collaborate more on HD-related projects. Furthermore, measurability is an important capability that the HDE needs to improve.
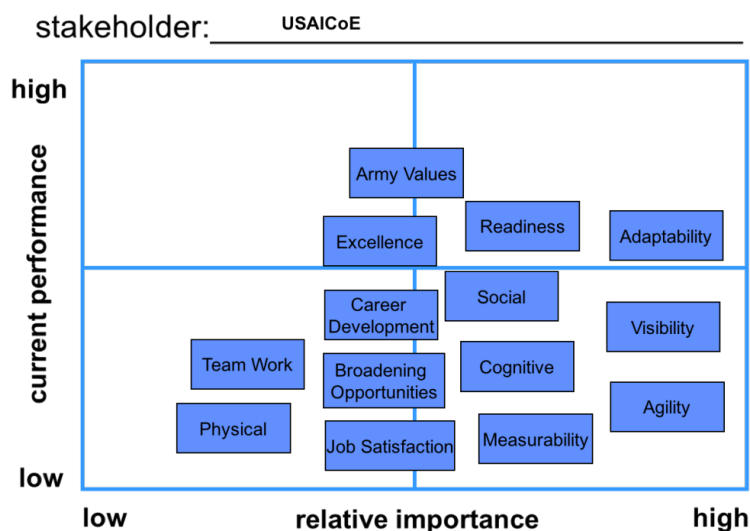
Figure 23: Stakeholder Value Map - USAICOE

5.4.2 Individual: The stakeholder value maps depict how the stakeholder group perceives the enterprise is satisfying their needs. While measurability and visibility are important to the HDE and USAICOE, the individual is not concern with being able to measure human performance and having visibility on human dimension best practices. In summary, individual's priorities are not in line with optimizing human performance.   Figure 24 shows that predictability and adaptability need improvement.
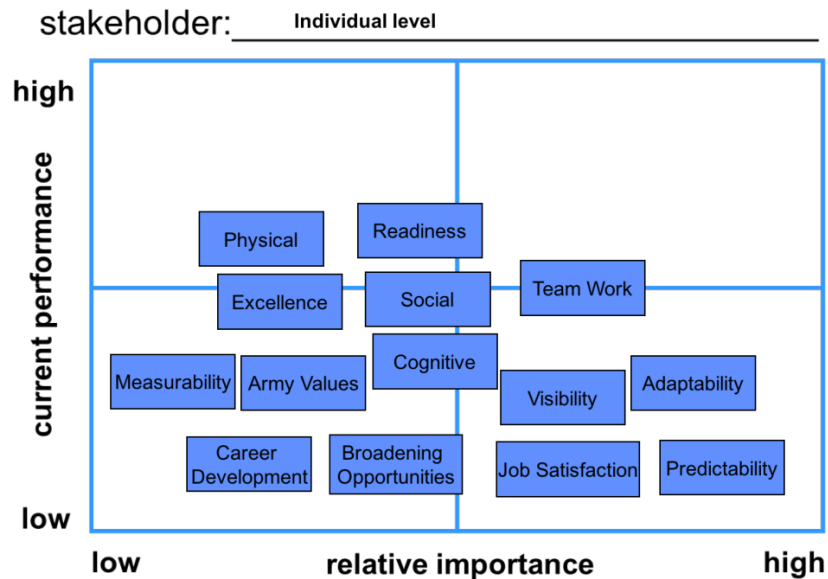
Figure 24: Stakeholder Value Map - Individual

The next section describes the USAICOE enterprise using the ARIES enterprise elements.

5.5 Enterprise Elements

"Enterprise transformation and design has determined that enterprise architecting must take a systems perspective, viewing the entire enterprise as a holistic system that can be understood by examining the enterprise through multiple perspectives or views of an overall integrated framework." (Nightingale and Rhodes, 2004).

The ARIES framework applies the enterprise element model to understand the interdependencies within USAICOE. The description for the enterprise elements captures the "As-Is" enterprise. Each enterprise element provides a holistic understanding of the enterprise, which is necessary to transform the enterprise to the future state. The stakeholder discussions provide additional insights on the enterprise elements and the existing capabilities. Based on stakeholder discussions and initial findings of the enterprise capabilities, the research identifies the **ecosystem, stakeholder, organization, and strategy** as the primary drivers of the

USAICOE enterprise. These four enterprise elements will help analyze, evaluate, and make recommendations for the future of Army human dimension transformation.

5.5.1 Ecosystem - USAICOE is one of the leverage points that can help with the transformation of the HDE. In the Chapter 3, the analysis of the ecosystem findings was that USAICOE is strongly influenced by political, technology, and resources. This key insight recommends that the leadership should take a proactive approach and anticipate the political, technology, and resource changes.

5.5.2 Stakeholders - The most important stakeholder for the success of the AHDS integration is at the individual level. As discussed in Chapter 4 (stakeholder analysis), the students in training at USAICOE consume the resources and are the output of the HD system. The sum of the individual students will provide the greatest emergence behavior of the enterprise and achieve the goals of optimizing human performance outlined in the AHDS. After the completion of the training and education at USAICOE, the primary beneficiary becomes the Army units.

5.5.3 Strategy - At the national level, there are multiple strategic documents that influence the HDE and USAICOE. This includes the National Security Strategy, National Defense Strategy, National Military Strategy, Defense Strategic Guidance, and the Quadrennial Defense Review. At the Army enterprise level, the strategic documents outlined in Section 3.2 discussed the influences that the strategy played in impacting the HDE and USAICOE. Some of the key documents included Force 2025 and Beyond (F2025B), Army Operating Concepts, and Human Dimension Strategy. In figure 5-3, the following strategies summarize the capabilities needed for the future state.

Table 9: Strategy and Enterprise "needs"

Strategy / Date	Derived "Needs" - Capabilities
Operational Environment to 2028 August 2012	Sets the key conditions and threats in the future operational environment
Human Dimension Concept May 2014	Ability to understand cognitive, physical, and social components; integration of science and technology (S&T)
Force 2025 and Beyond (F2025B) October 2014	Interoperability and synchronization with other strategies; ability to integrate into a common modernization strategy
Army Operating Concept (AOC) October 2014	Optimizing human performance as of the the ten fundamental principles for the future Army
Human Dimension White Paper October 2014	Ability to establish "cognitive dominance," "realistic training," "institutional agility"; elevates the importance of the individual; human dimension governance structure and process
Army Human Dimension Strategy June 2015	Synchronizes and integrates multiple Army efforts; provides the strategic vision, objective, key tasks

USAICOE as part of the HDE must possess the capabilities:

- Agility – Ability to "pivot" to new strategies

- Adaptability – Ability to integrate the latest advances in S&T

- Visibility to allow synchronization and integration across Army – academia, government, and S&T community

- Measurability – the ability to assess, monitor, and improve cognitive, physical, social components of human performance

5.5.4 Information - USAICOE enterprise requires information by each key stakeholder group (leader, staff, instructors, students). The HDE requires metrics to measure the performance of the AHDS. From the enterprise level down to the individual, there are ambiguous enterprise level metrics to assess, evaluate, and how the individual soldiers are performing towards the AHDS end state. Furthermore, USAICOE's current metrics for measuring human dimension value is ineffective. Currently, USAICOE's metric for HD performance is simply the number of initiatives and programs, which are not appropriate indicators of the enterprise transformation. USAICOE has several programs aligned with the AHDS like the Cognitive Enhancement Program (CEP).

The stakeholder value network map illustrates the value exchange and control among the stakeholders.
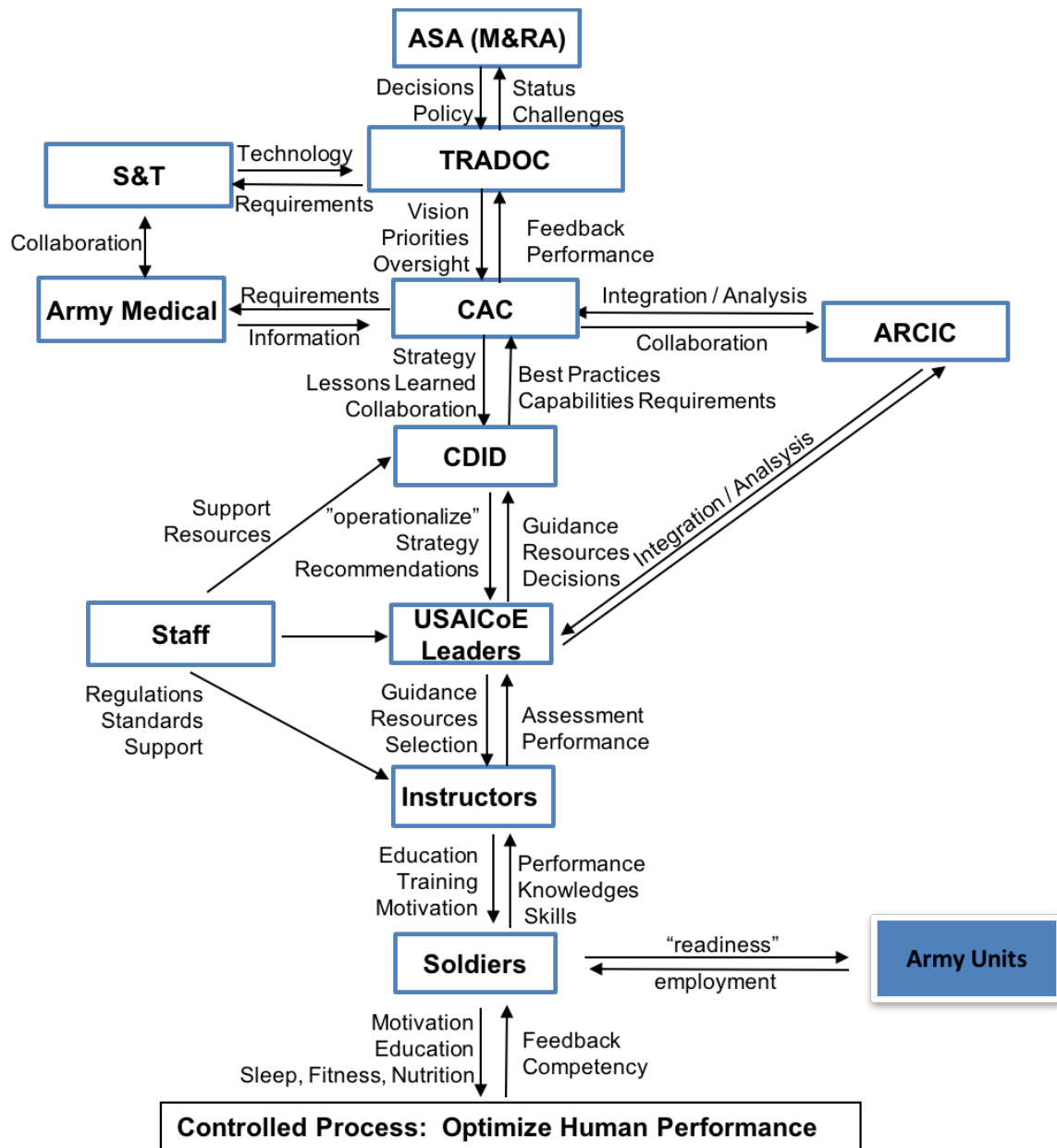
Figure 25: Stakeholder Hierarchical Control Structure

5.5.5 Infrastructure - USAICOE and HDE are collaborating and sharing information through official organizational websites, SharePoint, and even social media. The key to the transformation of the enterprise is the integration and synchronization across the multi-level enterprise. The following websites provide ways, means, and ends to collaborate and share information regarding the human dimension transformation efforts.

- APAN is a non-CAC card accessible SharePoint site that is being used to support collaboration on Human Dimension Initiatives, ideas, and discussions with Industry, Academia, Government, and Multi-National. https://wss.apan.org/s/HD/default.aspx

- Defense Innovation Marketplace provides the government and industry community a centralized resource. http://www.defenseinnovationmarketplace.mil/

- Human Dimension Dashboard SharePoint Portal. https://combinedarmscenter.army.mil/sites/hd/HD_Library/HD_Dashboard.aspx

- Intelligence Knowledge Network is a knowledge management tool for Army intelligence. https://www.ikn.army.mil/

- TRADOC YouTube. https://www.youtube.com/user/usarmytradoc

All of the infrastructure tools help integrate the AHDS with the HDE and USAICOE.

5.5.6 Products / Services – The HDE integrates and synchronizes existing Army programs and research. USAICOE's value delivered to the enterprise is educating, training, and future force development for Army intelligence. Well-educated and trained professionals are the ultimate product of the USAICOE system. As USAICOE develops greater efficiencies at the individual level with higher performing individuals, this will yield a significant impact on the HDE and the future Army.

5.5.7 Processes - There are weekly, monthly and quarterly working groups attended by USAICOE as part of the HDE. The monthly community of practice is optional and attended by select members of USAICOE CDID. While the AHDS applies to everyone, the input and output of these meetings reside with only a few members at USAICOE.

5.5.8 Knowledge - A contractor position within the USAICOE CDID assists with long-term continuity as the active military members rotate. The tacit knowledge of key initiatives and programs continue to be a challenge; however, USAICOE has a "Command Psychologist" with a doctorate. Most centers of excellence lack the resident expertise and knowledge to be able to implement the AHDS down to the individual.

For example, at USAICOE, one of their key programs on integrating the AHDS at their level is the Cognitive Enhancement Program (CEP). The CEP program is integrated into Military Intelligence Basic Officer Leader Course (MIBOLC) and the Human

Intelligence Collector Course (35M1). The CEP methodology is based on observations, discussion with instructors and students, and tailored to each course's needed outcomes. Based on stakeholder discussion, the challenge is quantifying the value of the CEP to the students.

5.5.9 Organization – The HDE consists of multiple stakeholders separated by organization, geography, and relationships. The HDE is a not physically located as one entity, but an amalgamation of individuals from different domains focusing on leadership, training, S&T, capabilities development, and readiness. While the AHDS is assigned to the Mission Command Center of Excellence and Combined Arms Center, the execution of the strategy applies to all domains and centers of excellence.   The HDE leadership should routinely assess the progress of the AHDS by looking at least two levels below the enterprise level. At the individual level, one will be able to measure the effectiveness of the AHDS.
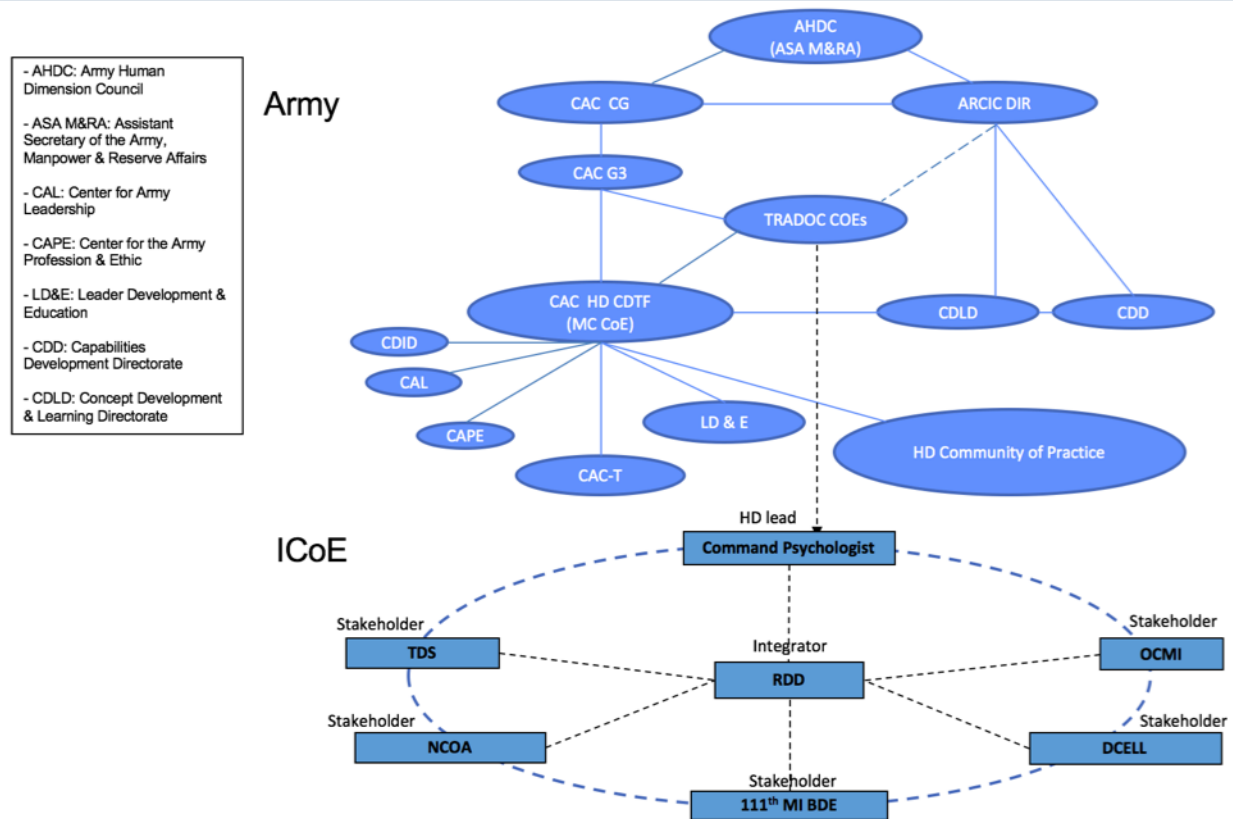
Figure 26: HDE Level & USAICOE Relationship (USAICOE CDID 2016)

5.6 Soft Factors

"As your chief of staff, I will ensure we will remain ready as the world's premier combat force," Miley said. "Readiness to fight and win in ground combat is, and will remain, the United States Army's No. 1 priority, and there will be no other No. 1. We will always be ready to fight today. We will always prepare to fight tomorrow." – Gen. Mark Milley, 39th Chief of Staff of the Army (Tan 2015)

The stakeholder discussions highlight that "readiness" is the current paradigm for USAICOE and the Army enterprise. Due to budget cuts and sequestration, the Army's number one priority is "readiness" and not future modernization.   The emphasis of readiness transcends long-term modernization plans and implies that all existing programs must be tied to "readiness." With the current paradigm, the implementation of the AHDS becomes a challenge with its long-term strategic focus. Leaders and commanders want to know the immediate benefit and value of the human dimension strategy. The research shows that the AHDS has minimal impact on the day-to-day operations at the tactical level.

In the next section, the X-Matrix provides the current state of the HDE.

5.7 Enterprise Alignment – X-Matrix Analysis

The X-Matrix is a useful system tool that visually captures the alignment of an enterprise's objectives, stakeholder values, key processes, and metrics (Nightingale and Rhodes 2015). In Figure 27, each cell represents a strong (dark shade), weak (light shade), or no interaction between the row and column. This tool is particularly useful for showing shortfalls and any opportunities for transformation with the misalignments in the current state. A misalignment will show no interaction between two entities.

Figure 27: X-Matrix HD Enterprise – Existing Program View

The X-Matrix can be used to ask the following questions:

1. Upper Left Quadrant (Strategic Objective – Metrics): *Is this strategic objective measured by this metric?*

2. Lower Left Quadrant (Metrics – Key Processes): *Does this metric measure performance of this process?*

3. Lower Right Quadrant (Key Processes – Stakeholder Values): *Does this process contribute to delivering this stakeholder value?*

4. Upper Right Quadrant (Stakeholder Values – Strategic Objective): *Is this stakeholder value represented by this strategic objective?*

5.7.1 Discussion

The "As-Is" Enterprise matrix asks four questions about the HDE's alignment with the objectives, metrics, process, and values. First, *are the AHDS strategic objectives measured by the currently existing programs?* Second*, does this existing Army programs measure the performance of the AHDS lines of efforts?* Third*, does this AHDS line of efforts address the values of the HDE stakeholders?* Fourth*, are the HDE stakeholder's values represented by the AHDS strategic objectives?*

A major insight was the lack of metrics to measure the performance of the enterprise. Due to limitations of data and metrics, the X-Matrix was adapted to represent the current state of the HDE using existing programs instead of metrics. As previously discussed, the HDE does not have sufficient, specific, and appropriate metrics to assess the current enterprise performance. The adapted X-Matrix analysis captures the alignment of the enterprise objectives, existing Army programs, key processes, and individual's stakeholder values.

While applying the X-Matrix for the original key process, the HDE lacked easily identifiable process and metrics. The HDE operates based on project-centric view rather than process-centric. The HD initiatives and programs are driving the enterprise process. Essentially, the enterprise is measuring performance with the number of programs as a metric. The HDE leadership should specify the requirements for the HD-related programs.

5.7.1 Strategic Objectives alignment with Existing Enterprise Programs (Upper Left Quadrant)- *Are the AHDS strategic objectives measured by the current existing programs?*

The upper left quadrant measures how well the enterprise objectives align with the existing Army enterprise tools and programs. These Army tools and programs do not have well-defined metrics aligned to the strategic objectives. While the existing Army tools capture some data to the individual level, it is hard to measure whether or not progress is being made towards the strategic objectives outlined in the AHDS. In other words, the current Army programs and tools do not address methods to optimize human performance and build cohesive teams.

The key findings are only a few existing Army programs sufficiently align with the HDE strategic objectives such as Talent Management, Personality test (e.g. Myers-Briggs), and

morale. All three programs are existing "tools" that Army leaders in command have at their disposal; however, the measuring performance at the individual level is challenging. Also, the Army units do not have the subject matter expertise in cognitive science and applied psychology to train all the leaders in the Army on measuring human performance. For the AHDS to be successful, it must provide more clarity on the measurement of effectiveness and measurement of performance for optimizing human performance, especially for establishing cognitive dominance (LOE 1). For instance, at what point does an individual's performance meet the "cognitive dominance" criteria?

5.7.2 Existing Enterprise Programs alignment with Key Processes (Lower Left Quadrant)- *does this AHDS line of efforts address the values of the HDE stakeholders?*

The research investigated the various enterprise programs in the Army that has applicability to the Human Dimension Strategy. More specifically, programs that assisted with the optimizing human performance and team cohesion. In general, these enterprise tools centered around Leadership, Education, Knowledge Management, Assessment, and other feedback tools.   With the decrease in budget, the Army enterprise needs to identify synergies with existing programs, tools, and feedback mechanism. The best opportunities are those "low-hanging" fruit that can be maximized through integration, synchronization, and sharing of best practices.

The key insights were leadership development and the Army profession process has the greatest interactions with all the enterprise programs related to the HDE objectives. This is not surprising, but it emphasizes that leadership and the army as a professions continue to be one of foundation for future Army. Furthermore, Leadership Development and Army Profession have greater influence and interactions that the AHDS. For the purpose of the research, the AHDS's cognitive dominance, realistic training, and institutional agility are evaluated as key programs. The AHDS has fewer interactions and compatibility with existing Army tools and systems.

Many of the existing Army tools and programs do not align with the AHDS line of efforts ("cognitive dominance") except Talent Management. Without a doubt, the analysis shows that Talent Management has the strongest interaction with all the key processes. The research underscores that importance of identifying, recruiting, and keeping the right people in the Army. Talent management presents itself as a more viable and feasible solution than

integrating the AHDS.

5.7.3 Key Processes alignment with Stakeholder Values – *are the HDE stakeholder's values represented by the AHDS strategic objectives?*

The stakeholder values represent the values of leaders, staff, instructor, and student. There is a limitation in the research due to limited population sampling and individual differences. One of the main findings is the "cognitive dominance" process does not address all the stakeholder values**.**

Based on literature review and stakeholder discussions with personnel at all three levels, the following stakeholder values are defined:

- Team Work / collaboration – Working effectively as a member of a team
- Excellence – Solving the right problem and efficiently
- Army Values – Loyalty, Duty, Respect, Selfless-Service, Honor, Integrity, Personal Courage (LDRSHIP) remains a cornerstone of the Army enterprise.
- Adaptability – Ability to "plug-and-play" in any unit
- Readiness - Ability to perform and deliver results now
- Job Satisfaction – Stakeholder enjoys the contribution of his or her efforts
- Predictability - day-to-day schedules, deployments, and reassignments
- Career Development- mentorship, professional development, military schools
- Broadening Assignments / Opportunities – Training with Industry (TWI), joint assignments, teaching assignment at West Point or ROTC

5.7.4. Stakeholder Values alignment with Enterprise Objectives– *Is this stakeholder value represented by this enterprise objective?*

As outlined in the AHDS, the five major process for creating and capturing value in the enterprise are depicted in the figure above. The five major processes **-** Leadership development, Army profession, Cognitive dominance, Realistic training, and Institutional agility. In general, almost all of the stakeholder values align with the HD enterprise objectives except Predictability, and Broadening Assignments. The Army's younger generation population groups have a higher demand for predictability.

5.8 USAICOE "As-Is" Enterprise Summary

In this chapter, the current state of USAICOE provided several key insights that will be used to recommend the future architecture of the HDE. The analysis of USAICOE as a case study provided the following insights.

5.8.1 Overall Strategy: The USAICOE's leadership aligns with the direction of the senior Army leaders. For instance, USAICOE's strategic plan integrates the AHDS to the organizational level (e.g. subtask 6e: Optimize Human Performance). The AHDS strategy is well-nested within the USAICOE's strategic plan and clearly outlines the objectives of the organization. However, the USAICOE does not have the appropriate metrics and assessment tools to optimize human performance at their organization. The ability to measure the human dimension key tasks and USAICOE HD integrated task (e.g. subtask 6e) remain ambiguous. Also, based on stakeholder discussion at three levels, there is not a standard metric for measuring the human dimension efforts across the enterprise.

5.8.2 Leverage Points: The opportunities or risk for enterprise change is at Capabilities Integration Development Directorate (CDID) and Instructors. Additionally, the research suggests that having a "command psychologist," or a subject matter expert in cognitive sciences, is helpful for "operationalizing" the AHDS to implementation. It is recommended that COE CDIDs have access to or employ cognitive scientists for developing human dimension-related initiatives and programs.

5.8.3 Instructors: Similar to talent management, identifying and recruiting top instructors is paramount for the success of the AHDS or any Army strategy. The quality of the Instructor is essential for "translating" the AHDS into practice. Incentives should be utilized to attract the top talent for instructor positions at USAICOE and other COEs.

5.8.4 Capabilities Development and Integration Directorate (CDID): CDID develops operational intelligence concepts, determines operational capability requirements, and design. CDID looks at the long-term strategy and direction of military intelligence. CDID must have the capability and capacity to translating or "operationalize" higher strategy to the training, education at the intelligence schoolhouse. The effectiveness of the CDID can be measured based

on the situational understanding of the instructors and individual students. The AHDS cannot be successful without the alignment of both the CDID and instructors.

The optimization of human performance begins at the lowest level with focusing on the Individuals, Instructors, CDIDs, and Centers of Excellence (IICCE). The organization structure, process, and priorities should maximize the alignment of all four components of the IICCE.

The following heuristics were developed while applying the ARIES framework onto USAICOE's current state. Based on the case study of USAICOE, some of these principles might be relevant to the other centers of excellence and CDID.

- ❑ *The COE strategic objectives must be nested with the AHDS.*
- ❑ *The enterprise leverage points are at the interfaces of the organizational system's boundary – CDID, Instructors.*
- ❑ *The organization must understand the dominant element influencing ecosystem factor*
- ❑ *Value must be created and captured starting at the individual level*

Chapter 6: Analysis for Architecting the Future HDE

This chapter provides the supporting analysis for architecting tasks and developing high-level requirements for the future HDE. The future architecture of HDE needs to align the three levels of the enterprise. One method for checking alignment is to reapply the X-Matrix for the future state. The future "To-Be" X-Matrix supports the alignment of the enterprise goals, HDE requirements, existing Army programs, and stakeholder's values. The alignment of these four components helps integrate the three levels of the enterprise. The analysis for architecting begins with developing a more holistic vision for the HDE future using a vignette.

6.1 Envisioned Future of HDE

In the previous chapter, the case study on USAICOE provided a more holistic understanding of the current state of the enterprise. One of the findings is that USAICOE does not have the appropriate metrics and assessment tools to optimize human performance. While the focus for USAICOE remains on "readiness," the AHDS has little impact on the students and instructors at USAICOE. This section takes into consideration the misalignments and creates a holistic vision for the future enterprise.

The envisioned future for the enterprise identifies a few imperatives that would help guide the human dimension transformation process. The future state of HDE must become more agile, adaptable, measurable, and visible with its interactions with the enterprise elements.

In the next section, a vignette describes the vision statement in a more holistic manner and help "humanize the transformation" by making a vision a reality (Nightingale and Rhodes 2015, 75).

6.1.1 Vignette of the HDE 2025

The HDE is fully operational capability (FOC) by 2025. The HDE is *adaptable* and can integrate the latest advances in S&T. It possesses *agility* as an enterprise and can "pivot" to new strategies faster to meet the future uncertainty. There is *visibility* across system boundaries that allow human dimension synchronization across the Army, research community, government, and industry. The HDE has target metrics for assessing, monitoring, and improving cognitive, physical, and social components of human performance. The AHDS is rewritten using a *bottom-up approach* focusing on the individual's needs as a priority. The "design" of the HDE focuses

on maximizing value delivery by focusing on individuals, instructors, capabilities development and integration directorate (CDID), and centers of excellence (IICCE). The human dimension concept has a program of evaluation similar to the current Army education and training program. Every COE CDIDs have a subject matter expertise in the areas of cognitive psychology and human performance to assist with the development of target metrics.

The human dimension strategy is fully integrated and synchronized across the entire Army enterprise through collaboration and sharing of best practices at the lowest levels. A platform exists that allows individuals to provide anonymous feedback to the highest level of the enterprise on the direction of the future Army and its strategies. Every service member's inputs matter to the development and success of the AHDS. There is a paradigm shift in the development of a strategy to include methods like "crowd-sourcing." The aggregate of individual service members' ideas exceeds the strategic vision of any one individual.

6.2 Supporting Analysis for the Future HDE

6.2.1 System Architecture Analysis

"Architecting" sets the path for future human dimension enterprise success. The research investigates two fundamental questions (1) Does the HDE system meet the needs of the stakeholders? (2) Does this HDE system deliver value?   The X-matrix assists with answering the questions mentioned above.

The author adapts the X-Matrix to evaluate the alignment of the AHDS goals, HDE requirements, organizational programs, and individual stakeholder needs. The analysis for the future HDE begins with summarizing the derived high-level "needs" from Chapter 3 - The Human Dimension Enterprise Landscape.

6.2.2 Human Dimension Enterprise – "Needs"

As discussed in Chapter 3, the literature review on HD plays an instrumental role in extrapolating the enterprise "needs." These derived needs and capabilities should be integrated into the future design of HDE.   The high-level needs from the ecosystem are drivers of the enterprise value creation. The dominant enterprise elements are the ecosystem, stakeholders, organization, and strategy.   Table 6 revisits the HDE needs for the transformation of the future HDE.

Table 6: Human Dimension Enterprise "Needs"

Event / Date	Derived HDE "Needs" / Future Capabilities
Operational Environment to 2028 August 2012	Ability to adapt to the future operational environment
Human Dimension Concept May 2014	Ability to understand cognitive, physical, and social components; Integration of science and technology (S&T)
Force 2025 and Beyond (F2025B) October 2014	Interoperability and synchronization with other strategies; ability to integrate into a common modernization strategy
Army Operating Concept (AOC) October 2014	Optimizing human performance as one of the the ten fundamental principles for the future Army
Human Dimension White Paper October 2014	Ability to establish "cognitive dominance," "realistic training," "institutional agility;" elevates the importance of the individual; human dimension governance structure and process
Human System Conference February 2015	Collaborates with government, academic, and industry; establishes metrics for assessing human system
Cognitive Dominance Symposium April 2015	Synchronizes cognitive dominance efforts – brain health, brain development, trust, and cognitive biases / decision making
Army Human Dimension Strategy June 2015	Synchronizes and integrates multiple Army efforts; provides the strategic vision, objective, key tasks
Mad Scientist Conference October 2015	Builds cohesive teams to win in a complex world – discussion of advances in neuroscience to optimize human performance

The next section describes the requirements for the HDE system.

6.2.3 HDE Requirements (Future Needed Capabilities): The future HDE must possess these capabilities:

- **Agility** - Ability to "pivot" to new strategies

- **Adaptability** – Ability to integrate the latest advances in S&T

- **Visibility** to allow synchronization and integration across Army - academia, government, and S&T community

- **Measurability** – the ability to assess, monitor, and improve cognitive, physical, social components of human performance

The two major areas for improvement are visibility and measurability. The current HDE lacks the ability to quantify human performance. These critical gaps should be addressed when transforming the current HDE to future HDE.

6.3 System Requirements

What are the system level requirements for the future HDE?

Systems Engineering (SE) is useful in translating the AHDS to "design" by defining system level requirements for the HDE. The system level requirements help to identify the

current Army programs that can serve as "quick wins" for the HD transformation. The system level requirements take into consideration stakeholder discussion and the key gaps from the research analysis.

6.3.1 System Level Requirements for Future HDE:

The future HDE enterprise system shall…

- *Be easily understandable by all stakeholders*
- *Hold individuals accountable*
- *Not be dependent on science & technology*
- *Utilize a common metric to measure the transformation progress in the enterprise*
- *Use language related to readiness*
- *Emphasize leadership development as a tool to increase soldier's motivation*
- *Discuss methods and tools to establish cognitive dominance*
- *Provide a leader's orientation and training*

The next section applies the derived system requirements to evaluate existing Army programs, which are potential solutions for the HDE. The X-Matrix assists with the realignment of the HDE towards the future goals.

6.4 HDE Future – Realigned

In Chapter 5, the original X-Matrix identifies a misalignment in the AHDS. The AHDS does not meet the "needs" of the Army Human Dimension ecosystem. As previously discussed, some of the gaps include – not easily understandable by stakeholders, dependent on technology, lack of common metrics, and weak interactions with readiness.

The "To-Be" X-Matrix captures the re-alignment of the AHDS, Requirements, Army programs, and stakeholder values. The realigned X-Matrix shows that the Army Leader Development and Army Profession programs have greater interactions with the HDE requirements for the future. For example, the AHDS is weak in three major areas. First, AHDS is not easily understandable by all the stakeholder in the HDE. Second, the AHDS lack a common metric that the HDE can measure performance and progress. Third, the AHDS is dependent on S&T to create solutions and capabilities.

Human Dimension Strategic Objectives

Top binary values (left block): 0 1 1 1 2 0 0 2 1 / 2 2 2 2 2 2 2 2 2

Top binary values (right block): 1 0 0 0 2 0 0 0 0 / 2 2 1 2 2 1 0 2 0

Strategic Objectives:
- Optimize the human performance of every Soldier and Civilian in the Total Force
- Build Cohesive teams of trusted professionals who thrive in ambiguity and chaos

Left column headers (Requirements / Metrics):
- Knowledge Management
- Linked to resiliency
- Discusses methods and tools to establish cognitive dominance
- Emphasis on leadership
- Tied to readiness
- Common metric – enterprise
- Not dependent on technology
- Hold individuals accountable
- Easily understandable by all

Center diagram: Strategic Objectives (enterprise) / Stakeholder Values (individual) / Requirements / Metrics / organization / Key Programs

Right column headers (Stakeholder Values):
- Teamwork / Collaboration
- Excellence - getting the mission done
- Army Values
- Adaptability
- Readiness
- Job Satisfaction
- Predictability
- Career Development
- Broadening Assignments/Opportunities

Key Programs:
- Leadership Development
- Army Profession
- Army Human Dimension Strategy
- Talent Management
- THOR3
- Center for Enhance Performance
- Performance Triad (P3)
- Comprehensive Soldier and Family Fitness (CSF2)

Figure 28: X-Matrix with Requirements

Based on the X-Matrix analysis, the author identifies a few "quick win" HD solutions that can satisfy the strategic goals of the AHDS. The programs are THOR3, Center for Enhanced Performance (CEP), and Performance Triad (P3). All three programs align with the enterprise goals, HDE requirements, existing Army programs, and stakeholder's values. It is important to note that these three programs are not Army required training outlined by Army Command Policy (AR 600-3) and managed by the Army units (primary beneficiary). The Army unit leadership should take advantage of existing HD-related programs to "optimize" the performance of the individual soldier. Based on the research, the author recommends using the derived requirements to identify existing Army programs that can help with the HD transformation.

Chapter 7: Discussion

This chapter provides the research findings, recommendations for transformation, and summary of the research objectives. The research findings highlight the areas of misalignments for improving the current HDE to the desired HDE. Based on the results of the research, the author provides recommendations for transformation at the enterprise, organization, and individual levels. The chapter identifies "quick wins" for the HDE using existing Army programs and heuristics for architecting. It concludes with limitations, areas for future work, and closing thoughts.

7.1 Research Findings

The current Army's Human Dimension Strategy has made minor progress moving the Army enterprise towards the envisioned future – *optimized human performance of individuals and teams*. The research suggests that the value of the AHDS is not well articulated to the lowest individual level. Based on stakeholder discussions, many service members in the Army have little to no understanding of the human dimension strategy and its implication. For instance, less than 50% of the junior captains in one section of the military intelligence career course (MICCC) knew about the AHDS. The HDE leadership should familiarize all service members with the AHDS goals, purpose, and create a "bottom-up" forum to identify best practices from the Army units.

One of the concerns with the AHDS is the complex and ambiguous language in the strategy. The *"*human dimension" strategy means something different at every level of the enterprise. While the definition is explicitly defined in the AHDS, the CDID & instructors have a challenge on what it means to them at their level, especially establishing "cognitive dominance." From the individual to enterprise level, many do not understand how to integrate the AHDS at their level.

While the AHDS provides a synchronization effort, dialogue, and collaboration, the current programs in HDE reside within organizations responsible for education, training, and leader development. In practice, the AHDS is an "umbrella" strategy that combines multiple Army programs and initiatives. The HDE consists of many individuals and organizations from different areas that have competing priorities. The larger implication is that the HDE does not exist as one functional organization. The human dimension programs exist within silos and

stovepipes within the CAC. According to a stakeholder discussion, "things are the same" because the HDE does not have a program of evaluation. For instance, training (CAC-T) and education (CAC-E) are official core functions supported with funding in the CAC; however, the human dimension is currently just an initiative under the MCCOE. The AHDS can be successfully implemented when the HDE becomes a program of evaluation with proper funding.

The AHDS appears to be perceived as "boardroom talk." Currently, the value delivered to the enterprise is at the enterprise level – meaning, the enterprise stakeholders in the CAC (MCCOE) is performing the majority of the work towards HD strategy integration when the purpose of the strategy is for the individual. Additionally, it means that overall goal of the AHDS is not achievable if the Army cannot measure the individual performance as part of the AHDS. The AHDS will be successful when the individuals are creating the value.

The human performance of the individual is difficult to capture. At the tactical level, the Army lack the tools to measure human performance and the expertise in cognitive performance. Moreover, the AHDS does not specify the metrics for optimized human performance. While the lowest level individuals are the most important to value creation, this value is not harnessed and captured due to lack of proper resources and tools. The human dimension strategy should examine the methods to measure human performance across the enterprise uniformly.

Additional research should be conducted in the areas of individual and team performance. Based on the goals of the AHDS, optimizing individual performance might cause unintended consequences on team performance. The Army is a team-based organization that needs more followers than individually "optimized" leaders. The AHDS can potentially create an organizational culture that is not team-oriented and more individualistic. The next section provides recommendations for the HDE and AHDS based on the findings.

7.2 Transforming the Enterprise – Recommendations

With the decreasing budget, the HDE need to take advantage of the existing Army training tools and Army programs. The realigned X-Matrix indicates that there are existing Army programs that can satisfy the requirements for HDE. Additionally, this section analyzes the AHDS key tasks for "cognitive dominance" and areas for improvement using the SMART metrics model (Doran 1981).

7.2.1 Enterprise Level: Performance Measurement – Metrics

Currently, the AHDS consists of vision, lines of effort, strategic objectives, and tasks. The AHDS is missing a major key element – metrics.

Every enterprise should possess metrics to control the performance of the system. Managers within the enterprise at different levels should be able to ask *how are we performing a task?* For instance, in Table 10, the AHDS provides the "cognitive dominance" essential tasks for optimizing human performance. The research applies the SMART metrics model to analyze any shortfalls with the tasks. In general, most of the tasks are difficult to quantify, but can be qualified to a certain extent. The research recommends redefining the AHDS key tasks with measurable tasks. The larger enterprise lacks standard metrics to capture the overall progress of the AHDS transformation [refer to Annex B: Cognitive Dominance].

Table 10: Cognitive Dominance" Key Tasks using S.M.A.R.T Analysis

Cognitive Dominance	Specific	Measureable	Achievable	Relevant	Time-Bound
Improved leader development	Y	Y	Y	Y	Y
Intellectual Diversity	Y	Y	Y	Y	Y
Educational Modernization	Y	Y	Y	Y	Y
Creative and Critical Thinking	Y	Y	Y	Y	Y
Living Doctrine	Y	Y	Y	Y	Y
Individual Assessments	Y	Y	N	Y	N
Professional Ethic	Y	Y	Y	Y	Y
Cultural Awareness	Y	Y	Y	Y	Y
Language Proficiency	Y	Y	Y	Y	Y
Appreciation of the Complex Operational Environment	Y	Y	Y	Y	Y
Athletic Performance	Y	Y	Y	Y	Y
Personal Resilience	Y	Y	Y	Y	Y
Performance Enhancement	Y	Y	N	Y	N
KSA Assessment	Y	Y	N	Y	N

There are three major shortcomings of the human dimension strategy key tasks under "Cognitive Dominance" – Individual assessments (1F), performance enhancement (1M), KSA assessment (1N) (see Annex B for reference).   All three key tasks are difficult to achieve and not timely. There seems to be a disconnect between the strategy and actual implementation feasibility of this plan. At the lowest level, all three key tasks are not implementable due to lack

of subject matter expertise, proper resources, and training. Typically, individual soldier's performance is measured based on standards, performance during exercise scenarios, and readiness level.

The author views that a good strategy is not only the ability to execute at the lowest level but also having the right direction from higher. If the lowest subordinate does not understand the strategy, the overall value of the enterprise will be lost. The ability of the Army to optimize the human performance begins with the individual's understanding of the larger picture and strategy.

In addition to metrics and clarifying the cognitive dominance key tasks, heuristics can serve as guidelines for other COE when adopting new strategies towards transformation. Maier supports that heuristics are abstractions of real world experience (Maier 2009).   The lessons learned and best practices from each COE in the areas of HD should be shared across system boundaries. The author advocates applying heuristics prescriptively when designing the direction of a new strategy. From the research, the following heuristics are valuable for "architecting" the future enterprise.

7.2.2 Architecting Heuristics

- ***Keep it Simple, Stupid (KISS)-*** AHDS needs to be written in a manner that is easily understood by everyone in the Army enterprise. One way to reduce ambiguity is to clarify the high-level language in the strategy because it lacks a sense of urgency. The AHDS needs to be able to integrate feedback from all levels promptly. It is recommended the AHDS be rewritten and tailored towards the lowest common denominator, the individual soldier. The author proposes that the strategy uses a bottom-ups approach outlining the individual competency expected for the soldier.

- ***Enterprise Transformation Principles -*** In Table 11, the enterprise transformation principles can serve as a checklist for determining whether or not the Army's Human Dimension Strategy has adequately adhered to the enterprise transformation principles. Based on the analysis and discussion above, the human dimension strategy meets only two of the seven enterprise transformation principles. The current AHDS transformation is a top-down transformation strategy and does not apply a holistic approach. Also, the enterprise effectiveness is predominantly unknown due to lack of common metrics. The HD transformation can be successful when all three levels of the HDE value paths are aligned.

Table 11: Adapted from Enterprise Transformation Principles (Nightingale & Srinivasan 2011, 14)

Enterprise Transformation Principles
❑   Adopt a holistic approach to enterprise transformation
☑ Secure leadership commitment to drive and institutionalize enterprise behaviors
☑ Identify relevant stakeholders and determine their value propositions
❑ Focus on enterprise effectiveness before efficiency
❑ Address internal and external enterprise interdependencies
❑ Ensure stability and flow within and across the enterprise
❑ Emphasize organizational learning

- ***Leverage at the Interfaces -*** The HDE architects should identify the interfaces of the organizations and enterprise level metric to measure performance across all levels. By focusing on these key interfaces, the HDE will be able to streamline the value creation and capture more value. The enterprise should prescribe the capability desired in the enterprise from the COE to understand their priorities better.   Additionally, the Centers of Excellence need to understand the capabilities required by the larger enterprise.   For the success of the AHDS, the author recommends focusing on the interfaces and provide more resources to the instructors, Capabilities Development and Integration Directorate (CDID), and Centers of Excellence.

Table 12: Interfaces Across System Boundaries

Levels	Enterprise
1.0	Human Dimension
	CDID
2.0	USAICOE
	Instructors
3.0	Individual Soldier

At the organizational level, the CDID and instructors have the largest responsibility of delivery value across the system organization boundary. CDID and instructors must "operationalize" the AHDS into practice. Next, the individuals need to understand fully the competencies expected as part of the organization and enterprise. Through the alignment of individual competency and COE's organizational capabilities, this will ultimately provide the desired emergence behavior of the human dimension enterprise – optimized human performance.

- **Principle of the System Problem Statement (SPS)** - The statement of the problem defined the "high-level goal and established the boundaries of the system" (Crawley, Cameron, Selva 2015). The SPS helps focus on the value delivery of the enterprise. The SPS should be continually refined until the value delivery is whole represented. (Crawley, Cameron, Selva 2015). In Figure 29, the SPS captures the current HDE problem statement.

7.2.3 Individual Level- Bottom-Up Approach

7.2.3.1 Individual Transformation. Every individual is part of the larger human dimension enterprise system. In the context of the system of systems enterprise, individuals must be "nested" with the respective" organization's mission and function. At the individual level, he or she is ultimately responsible for one's readiness, physical fitness, professional competency, technical skills, and knowledge. The AHDS prescribes key attributes and competencies expected from every Soldier in 2025. From the AHDS, future soldiers are Agile, Adaptive, Innovative, Committed, Critical Thinker, Total Fitness, Empowered, Competent, Resilient (U.S. Army Combined Arms Center 2014, 8).

In the HDE, the individuals are the most important for delivering value to the enterprise. The research recommends that the AHDS be rewritten from the individual's perspectives using a bottom-up approach. From the stakeholder analysis, the primary needs of the individuals are education, training, motivation, guidance, feedback, and most importantly, time. The individual needs should drive the overall value focus for the entire HDE. The AHDS should be written in a manner that inculcates actions from the individual. As written, the AHDS is not implementable by an Army squad leader, an instructor at USAICOE, or even a platoon leader.
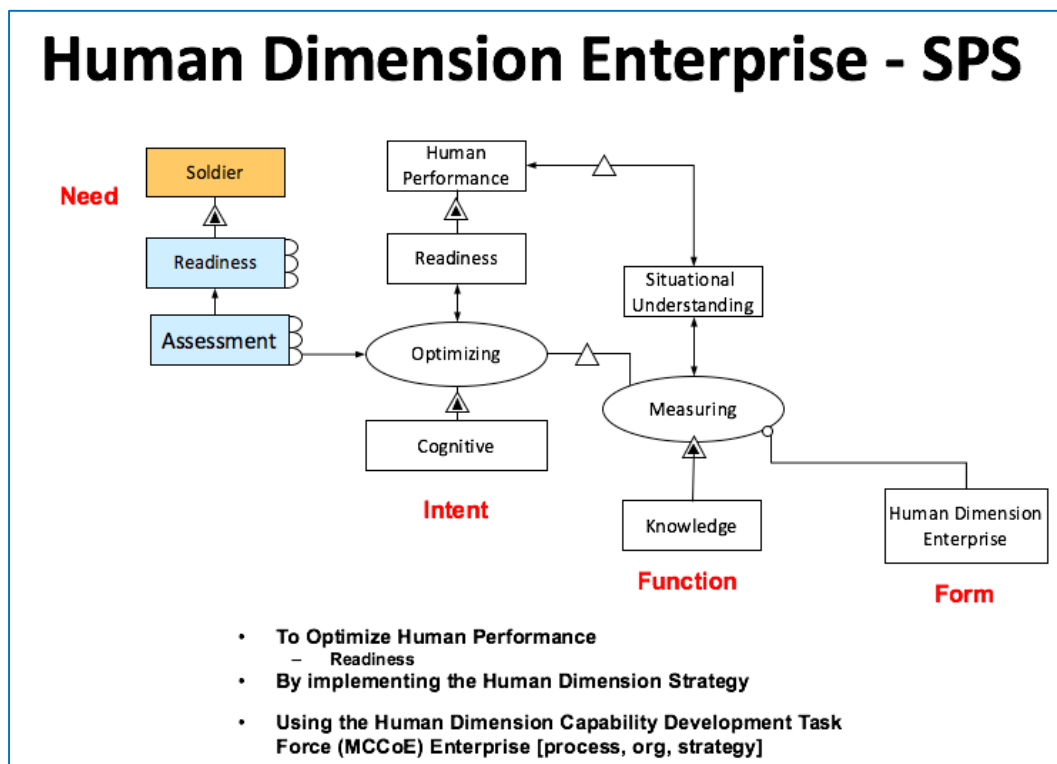
Figure 29: HDE System Problem Statement - Current

The overall value delivery of the HDE is to optimize human performance by implementing HD strategy using the HDE. In Figure 29, the current system problem statement helps translate the individual needs of the system and describes the expected output of the system. This reflects the current state of the HD architecture. Based on the SPS for the individual needs, the system requires the ability to "measure" knowledge to have an understanding of the situation. Without this essential secondary function, "optimizing" human performance function is defunct.

The recommended **System Problem Statement for the Future HDE:**

- To increase individual's performance

- By education, training, motivation, feedback, time (stakeholder analysis –individual needs)

- Using individuals, instructors, CDID, Centers of Excellence (IICCE) as leverage points in the enterprise.

The improved system problem statement provides a more feasible and actionable path towards the vision outlined in the AHDS. Additionally, the language is easier to understand and specific.

7.3 Review of Research Objectives and Analysis Summary

7.3.1 How effective is the Army Human Dimension Strategy (AHDS) delivering value to all levels of the enterprise?

The Human Dimension Strategy is not effectively implementable as written. The AHDS lacks clarity and sufficient enterprise measurement tools to measure the value created by the enterprise. A holistic approach provides a better understanding of the multi-levels stakeholders and needs of the HDE.

In the HDE, the individual level (Soldiers/Students at USAICOE) is the most important for delivering value to the enterprise. Using this user-centered approach, the HDE should be re-architected with this in mind. The primary needs of the students were education, training, motivation, guidance, feedback, and most importantly, time. The individuals should drive the overall value focus for the entire HDE. An essential component of the human dimension that was missing is motivation. Rather than using a scientific approach to optimizing human soldiers, the art of leadership should remain as the forefront system tool. Senior leaders should continue to focus on the individual needs and leadership rather than create an "umbrella" AHDS that does not impact or mean anything at the lowest level.

7.3.2 What are the requirements for the future HDE?

The research derives high-level requirements for the senior "architects" of the Army to consider for the future of the human dimension enterprise. The architecting requirements take into consideration the dominant ecosystem factors, gaps from USAICOE case study, and the author's assessment based on the investigation. The architecting requirements for future of HD programs were discussed in Section 6.3.1.

The future human dimension strategy shall…

- *Be easily understandable by all stakeholders*
- *Hold individuals accountable*
- *Not be dependent on science & technology*
- *Utilize a common metric to measure the transformation progress in the enterprise*
- *Use language related to readiness*
- *Emphasize leadership development as a tool to increase soldier's motivation*
- *Discuss methods and tools to establish cognitive dominance*
- *Provide a leader's orientation and training*

7.3.3 What are the existing Army programs that can be leveraged to accelerate the Human Dimension transformation?

The AHDS strategy desires to optimize human performance for the Army enterprise. The research identifies and recommends three existing programs that can accelerate the human dimension strategy implementation. The Performance Triad (P3), the Tactical Human Optimization, Rapid, Rehabilitation, and Reconditioning (THOR[3]), Center for Enhanced Performance (CEP) have the capabilities and synergies that should be leveraged to assist with the Army's human dimension transformation. These programs have the potential to assist with establishing *cognitive dominance, realistic training,* and *institutional agility*. All three programs satisfy the research evaluation criteria and the derived system requirements for the HDE. Also, all three programs apply a bottom-up approach and focus on the individual's performance.

As discussed, the critical shortfalls of the human dimension strategy can be addressed with further analysis of individual's needs and system requirements of the HDE. The individuals' needs were education, training, motivation, time, leadership. The developed system requirements were then applied using the X-Matrix to evaluate the existing programs in the

military related to optimizing human performance.   The author argues that these three programs are great examples of existing programs that the HDE leadership should leverage, integrate, and pool resources.

7.3.3.1 Performance Triad (P3)

Overall, the Performance Triad(P3) satisfies all the requirements defined from the research findings. The P3 program views the individual soldiers as the most important element in the system. P3 strives to "improve readiness and increase individual's resilience through public health initiatives and leadership engagement" (Performance Triad 2016). The program takes a holistic approach to optimizing the performance of individuals and teams using three key components - Sleep, Activity, and Nutrition (Performance Triad 2016). In COL Teyhen's monograph "Professional Soldier Athlete," she extends the strategic importance of sleep, activity, and nutrition for the military and the nation's youth (Teyhen 2014).

Figure 30: Performance Triad – Sleep, Activity, Nutrition (Baack, 2014)

P3 does a good job addressing many of the shortcomings of the human dimension strategy. In fact, the P3 concept and campaign has greater utility to the Army enterprise because the concepts are easily understood, directly applicable, and emphasize leadership engagement.

7.3.3.2 Lesson Learned from Special Operations Community: Tactical Human Optimization, Rapid, Rehabilitation, and Reconditioning (THOR[3])

THOR3 is similar to P3, but a program tailored for special operation forces (SOF). Special operation forces (SOF) are highly trained, generally more mature (age/experience), and routinely operate in uncertainty and challenging environments. The human dimension concept is

not new for the U.S. Special Operations Command (USSOCOM) community. The SOF community has been dealing with the challenge of increasing the human performance.

One of the key programs for optimizing individual human performance is the Tactical Human Optimization, Rapid, Rehabilitation, and Reconditioning (THOR[3]). THOR3 program is an "SOF-specific, physical-training program to increase combat performance and effectiveness, prevent injuries, improve health and longevity and facilitate a rapid return to duty" (USAJFKSWCS Academic Handbook 2015, 15). The THOR3 captures the essence of the all three components of the human dimension concept – social, cognitive, physical. THOR3 develops *social* bonds during the training at the team level, integrates practices in *cognitive* enhancement, and holds the individual accountable for their *physical* fitness. THOR3 has four specialties in strength and conditioning, physical therapy, performance dietetics, and cognitive enhancement (Kelley et al. 2013, 16). The benefits of the social and physical are not surprising, but one unique aspect of THOR3 is the cognitive enhancement program. Additionally, the THOR3 program already has trained cognitive enhancement specialists.

According to the RAND's assessment of THOR3, one of the main findings was the lack of well-defined assessment tools for cognitive capability (Kelley et al. 2013, 18). Like the challenge of "establishing cognitive dominance" and this research, the RAND study's findings and recommendations can be adapted to the HDE as well.

- *Human Dimension leadership lack understanding of "cognitive dominance"*
- *Human Dimension leadership should develop criteria and appropriate metrics for "establishing cognitive dominance"*
- *Human Dimension leadership should monitor the performance and metrics at the lowest level*
- *Human Dimension community should work with the Center for Enhanced Performance (part of Comprehensive Soldier Fitness- Performance and Resilience Enhancement Program) to develop assessment protocols*
- *Human Dimension leadership should adopt a unit level status report to capture the status of the human dimension efforts and progress*

    (Adapted from RAND's Assessment of THOR3 (Kelley et al. 2013)

The THOR3 addresses many of the needs, goals, and requirements of the HDE and the vision outlined in the *Human Dimension White Paper* (2014). The HD leadership should take the lesson learned from THOR3 program and the RAND assessment to improve the AHDS cognitive dominance line of effort.

7.3.3.3 Center for Enhanced Performance (CEP)

The Army HD leadership could leverage the research from the Center for Enhanced Performance (CEP) programs created at the United States Military Academy (West Point). A pioneer in the field performance enhancement for the Army, CEP has been around since the early 1990s (Kelley et al. 34). West Point's CEP goal is twofold – assists the Corps of Cadets with (1) academic skills and (2) performance enhancement techniques like speed reading, goal setting, team building, critical thinking, and performance psychology skills (About CEP 2016). This concept has been in development across the Army as part of the Army's Comprehensive Soldier Fitness Program and Resilient Enhancement Program (CSF-PREP). These performance enhancing skills can assist with the implementation of the human dimension strategy.

Figure 31: USMA Center for Enhanced Performance – Mental Skills (About CEP)

7.4 HDE Analysis Summary

The research investigates the Army Human Dimension Strategy (AHDS) and traces the high-level strategy from the enterprise level to the individual. The research applies the ARIES framework to analyze holistically the current human dimension transformation efforts and uses USAICOE as a case study to identify additional opportunities for transformation. The research investigates USAICOE as a case study because an effective way to understand an enterprise transformation is to investigate levels down from the enterprise.

The research traces the AHDS to the individual level using a stakeholder analysis, value mapping, and three-level view of the HDE. The understanding of the current state of the enterprise was enriched using stakeholder analysis and the ARIES's enterprise element model. The elements of the ARIES framework provide unique lenses for understanding the enterprise as a system and its interactions with the interfaces. Additionally, the thesis uses the principles and approaches of systems architecture and systems requirements. Systems architecture (SA) was used to develop heuristics for the future HDE. Systems engineering (SE) was insightful for determining the system level requirements for the future HDE as a system. The X-matrix was helpful in identifying and addressing any misalignments in the strategic objective, process, metrics, and stakeholder values. Based on the modified X-Matrix, three existing human dimension related programs are recommended. The research findings support that the Performance Triad (P3), THOR3, and CEP programs appear to be the best "quick win" solutions for HD transformation.

7.5 Key Contributions

In this research, the author attempts to reduce the complexity and ambiguity of the human dimension enterprise by viewing the HDE as three levels - enterprise, organization, and individual. The research suggests that the most effective levers for change are at the interfaces. While the interfaces are high leverage points, a paradigm shift will provide the greatest enterprise change from the individual. Individual ownership of their current state and reflection towards the future will help achieve the end state of the AHDS. At the individual level, self-awareness and motivation would help integrate the AHDS.

7.6 Limitations and Future Work

This section describes the limitations of research and areas for future work. The research uses a limited sample of stakeholder's discussion for insights. The research is limited to publicly available data and service members willing to provide insights. While the research analyzes the current state of the HDE, the AHDS does not have a specific date defined for implementation; however, one can imply that the time frame is for the future Army as part of F2025B.

Some of the personnel from the following organizations provided personal insights: Human Dimension Task Force, Mission Command Center of Excellence, USAICOE CDID,

USAICOE Requirement Determination Directorate, USAICOE Instructors, and several intelligences professional actively serving in the Army units. The author acknowledges that the research has incomplete information of the entire human dimension enterprise. While the analysis and framing of the enterprise are the author's personal view, the discussion from the stakeholders provides a deeper of understanding of the actual state of the enterprise and the organizational challenges.

The most challenging area for future analysis is the individual cognitive component. The research should have the purpose of trying better to understand the human dimension and increasing cognitive performance of individuals. This research may find other methods and tools to improve cognitive performance. By focusing on learning how to transform the individual to have increased cognitive performance will deliver value to the HDE.

7.6.1 Future Area of Work

The research analyzes the ongoing transformation of the Army HDE using a system approach. Another system tool that could extend the research is using a system dynamics model. If additional data was available, a system dynamic could model the current state of the HD enterprise and the management decision-making process. Also, a more in-depth stakeholder discussion using interviews would provide more fidelity on the current state of the HDE. These discussions would help investigate the metrics, parameters, and input that could be used to model the future of HDE.

The most challenging area for future work is understanding the individual cognitive component. The AHDS strives to improve cognitive performance. The future research should investigate methods to understand better the human dimension and increase the individual's cognitive performance. Future research may find other methods and tools to improve cognitive performance. With new approaches to improve the individual cognitive performance, this can have significant value to the overall HDE.

7.7 Closing Thoughts
"We can't solve problems by using the same kind of thinking we used when we created them"
– Albert Einstein

The human soldier is critical for the overall success of the individual, organization, and the enterprise. The human dimension strategy and the Army enterprise is hedging against the

future uncertainty with science and technology (S&T) ability to better assess and measure human performance at the individual level. While S&T has contributed to much of the Army's competitive advantage, using another "scientific" approach to the human soldier has strategic implications. The implication of optimized human soldier pushes the "Army culture" towards a direction possibly contradictory to its goal. No sensor, widget, or gadget will be able to replace the "art of leadership." Leadership is the solution neutral strategy that will always provide the U.S. Army its unique competitive advantage.

Additional research should be conducted in the areas of individual and team performance. Based on the goals of the AHDS, increasing the performance of individuals and making individuals may have a negative effective on team performance. A team dynamic is usually successful based on the perception that everyone is contributing equally. The Army should be wary of using an S&T approach to optimize the performance of every individual. At the end of the day, soldiers are human beings that can be motivated, inspired, to perform beyond *if the individual identifies with the leader, unit, and enterprise*. The first line supervisor must be able to provide purpose, direction, and motivation in order to have a successful enterprise transformation.

At the highest level, the AHDS makes a lot of sense given the shrinking budget, drawing back from two wars in Iraq and Afghanistan. However, in reality, Army's competitive advantage is not the "scientific" approach to leadership, but the "art" of leadership. At the lowest level, the majority appears not to have heard of the human dimension strategy and currently, the HDS does not mean anything to the youngest ranking private. If the future of our national security hedges on the human dimension strategy as part of the Army operating concept, the research suggests the human dimension strategy must be rewritten, improved, and clarified.

The AHDS implications are for more agile, self-aware, and capable individuals. The intent of the AHDS has implication at the highest level of the Army. The attributes, training, and resources required to optimize human performance is headed in the direction of the special operations community's value proposition. Doctrinally, the SOF organization performs all three desired function of the HDE – cognitive dominance, realistic training, and institutional training.

The research suggests senior leaders should revisit the direction of the AHDS. Sometimes, a less "critical thinking" soldier provides the maximum value to the enterprise through a career in the service. A successful HD integration might impact the ability for the

Army to retain top talent and retain the "optimized" lower-performing individuals. Additionally, there is no guarantee that optimizing human performance will increase the retention rate of the Army or the likelihood that a soldier is dedicated to a career service to the Nation. Nevertheless, change at the individual level remains a challenge.

The AHDS appears to be over reliant on the Science and Technology community to develop a scientific tool that can measure individual cognitive, social, and physical component in near real time. AHDS appears to be dependent on technology as the "silver bullet" for enhancing situational understanding of individuals and human performance. While the technology can be expected to exist in the timeline outlined in the strategy (2025), one must consider the serious implication of using technology to replace the art of leadership. Viewing human soldiers as mere tools to conduct tasks can dehumanize the importance of humans. While the HD community is depending on the S&T community for answers to a complex problem, perhaps, the HDE should be investing in other strategies that could provide more short-term value to the Army enterprise.

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Annex A: Army Human Dimension Strategy Map
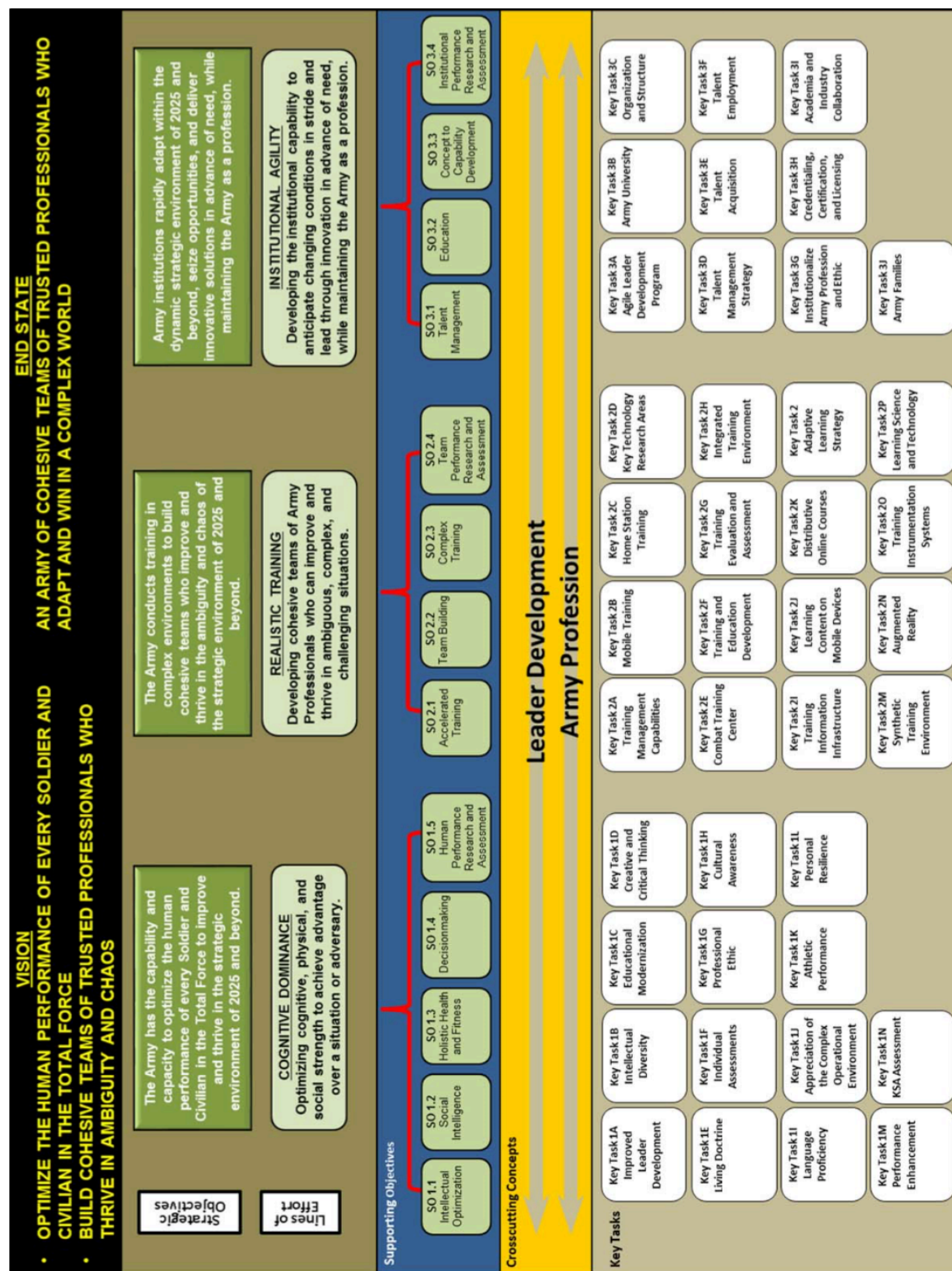
Source: U.S. Combined Arms Center, 2015

Annex B: Cognitive Dominance Key Tasks

1. Concept. The Cognitive Dominance Line of Effort (LOE) describes those objectives and tasks that equip Army personnel with the intellectual aptitude, cultural understanding, physical toughness, and resilience to adapt and thrive in ambiguity and chaos. The Mission Command Center of Excellence (MCCOE) is the lead integrator for the Cognitive Dominance LOE. MCCOE is responsible for planning and coordinating Army Cognitive Dominance efforts to optimize Army Professional's cognitive, physical, and social strength to achieve advantage over a situation or adversary. The Cognitive Dominance LOE includes existing initiatives and programs focused on doctrine, leadership, and ethics; diversity and modernization of individual education; athletic performance; resiliency; individual assessments; cultural awareness; and understanding the complex operating environment in order to support optimization of human performance throughout the Army.

2. Army Warfighting Challenges. The Cognitive Dominance LOE supports all of the Army Warfighting Challenges (AWfC). Cognitive Dominance is especially important to: AWfC 1: Develop Situational Understanding; AWfC 2: Shape the Security Environment; AWfC 10: Develop Agile & Adaptive Leaders; AWfC 14: Ensure Interoperability and Operate in the JIM Environment; and AWfC 19: Exercise Mission Command.

3. Key Tasks. Also, see Annex D: Army Human Dimension Strategy Map.

 a. Key Task 1A: Improved Leader Development. Incorporate research-based techniques in the assessment, training, education, and development of future leaders. Supports Objectives 1.2, 1.4, 2.2, 2.4, 3.1 (see base document for discussion of each supporting objective).

 b. Key Task 1B: Intellectual Diversity. Develop the Army's future leaders through educational diversity and individualized learning programs in order to build intellectual diversity, equipping them to succeed in complex and ambiguous environments. Supports Objectives 1.1, 1.2, 1.4, 2.3, 3.2.

 c. Key Task 1C: Educational Modernization. Adopt and continuously adapt innovative learning programs in order to equip the future leaders of the Army with the most technologically advanced education possible in order to help them win in an ever-evolving world. Supports Objectives 1.1, 1.2, 1.5, 3.2.

 d. Key Task 1D: Critical and Creative Thinking. Increase the use of critical and creative thinking techniques across the Army in order to reduce cognitive bias and deepen the understanding of the operating environments confronting the Total Force. Supports Objectives 1.1, 1.2, 1.4, 3.2.

 e. Key Task 1E: Living Doctrine. Publish Army Doctrine in a learner-centric and interactive format that is adapted to the way people learn in a digitally-enabled society and ensure it is available to the user at the point of need. Supports Objectives 1.1, 1.4, 3.2.

f. **Key Task 1F: Individual Assessments.** Leverage scientific research to provide unbiased and relevant feedback on the baselines, leadership attributes, and actions of individuals in order to enable continuous improvement. Supports Objectives 1.5, 3.1, 3.4.

g. **Key Task 1G: Professional Ethic.** Inculcate the professional Army Ethic into education and training at all levels to provide a solid ethical foundation for decision makers throughout the Total Force. Supports Objectives 1.2, 1.4.

h. **Key Task 1H: Cultural Awareness.** Increase cultural awareness across the Army to allow the Total Force to understand the motivations, needs, methods of communication, and mindsets of others in order to mitigate culture shock and insensitive behavior as well as gain the trust of and build relationships with a wide range of people. Supports Objectives 1.2, 2.2.

i. **Key Task 1I: Language Proficiency.** Identify Army Professionals who have the potential to learn, or already have the ability to speak, a foreign language and develop their ability to communicate and build relationships in another languages and cultural setting. Supports Objectives 1.1.

j. **Key Task 1J: Appreciation of the Complex Operational Environment.** Develop Army Professionals who can understand the complex nature of modern conflict. Supports Objectives 1.2, 2.3.

k. **Key Task 1K: Athletic Performance.** Leverage the most advanced techniques in health, sports medicine, nutrition, and fitness to increase wellness and optimize the physical performance of our Soldiers and Army Civilians. Supports Objectives 1.3, 1.5.

l. **Key Task 1L: Personal Readiness.** Sustain programs that develop personal readiness – physical, mental, social, psychological, and emotional – over the course of an Army Professional's career. Supports Objectives 1.3, 1.5.

m. **Key Task 1M: Performance Enhancement.** Develop programs to improve working memory, comprehending languages, calculating, reasoning, problem solving, and decisionmaking. Supports Objectives 1.1, 1.2, 1.5.

n. **Key Task 1N: KSA Assessment.** Conduct systematic assessment of emerging knowledge, skills, and attributes (KSA) and competencies required by Army Professionals in the future. Supports Objectives 1.1, 1.2, 1.3, 1.4, 1.5, 3.1.

Source: U.S. Combined Arms Center, 2014

Annex C: Army Warfighting Challenges

LEAD CoE	20 AWfCs	Functional Divisions
Mission Command	(2) Shape the Security Environment *(w/ USASOC)* (4) Adapt the Institutional Army (8) Enhance Training *(w/ CAC-T)* (9) Improve Soldier, Leader, and Team Performance (10) Develop Leaders (14) Ensure Interoperability and Operate in JIIM Environment *(w/ USASOC)* (19) Exercise Mission Command	Mission Command and Intelligence
Intelligence	(1) Develop Situational Understanding *(w/ USASOC)*	Human Dimension
Special Ops	(3) Provide Security Force Assistance *(w/ CAC)*	
Cyber	(7) Conduct Cyber-Electromagnetic Operations and Maintain Communications	LandWarNet
Maneuver	(12) Conduct Entry Operations (13) Conduct Wide Area Security (15) Conduct Combined Arms Maneuver *(w/ AVCoE)*	Maneuver Aviation & Soldier
Aviation	(11) Conduct Air-Ground Reconnaissance *(w/ MCoE)*	
Fires	(17) Deliver Offensive Fires (18) Deliver Defensive Fires	Fires
Maneuver Support	(5) Counter WMD (6) Homeland Operations	MNVR Support & Protection
Sustainment	(16) Set the Theater, Sustain Operations, and Maintain Freedom of Movement	Sustainment
ARCIC	(20) Develop Capable Formations	All WfFs

Process Deliverables (for each AWfC)
↓
Problem Statement (description of challenges)
↓
List of Learning Demands (10 max)
↓
Integrated Learning Plan
↓
Interim Solution Strategy
↓
Running Estimate
↓
Coordinate Stakeholder Activities

Risk & Value = Priorities

Analytical Approach
↓
What must we do? (Capability Needs)
↓
What can't we do? (Gaps)
↓
Are there potential mature, interim solutions?
↓
What do we trade? (CBA)
↓
Should we pursue the mature, interim solutions?
↓
Senior Leader Decisions

HD & AWfC Integration:

9 of 20 AWfCs have significant HD components (in red above) and HD is a Functional Division within the AWfC framework. The challenge is how to *best manage the cross-cutting HD components within those 9 AWfCs* to ensure synchronization inside TRADOC.

Source: Cognitive Dominance Symposium, 2015

Annex D: Human Dimension Enterprise Transformation Questions

The following questions are helpful for analyzing human dimension transformation at other centers of excellence:

- *Are the strategic objectives nested with the AHDS?*

- *What are the leverage points within your center of excellence?*

- *What are the main influential ecosystem factors?*

- *Are the "needs" of the ecosystem being satisfied at the organization level and individual level?*

- *What are the stakeholder values?*

- *Is value being created and captured by the organization?*

- *What are the metrics used to measure enterprise performance?*